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# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

*Edited by*

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*with the assistance of*





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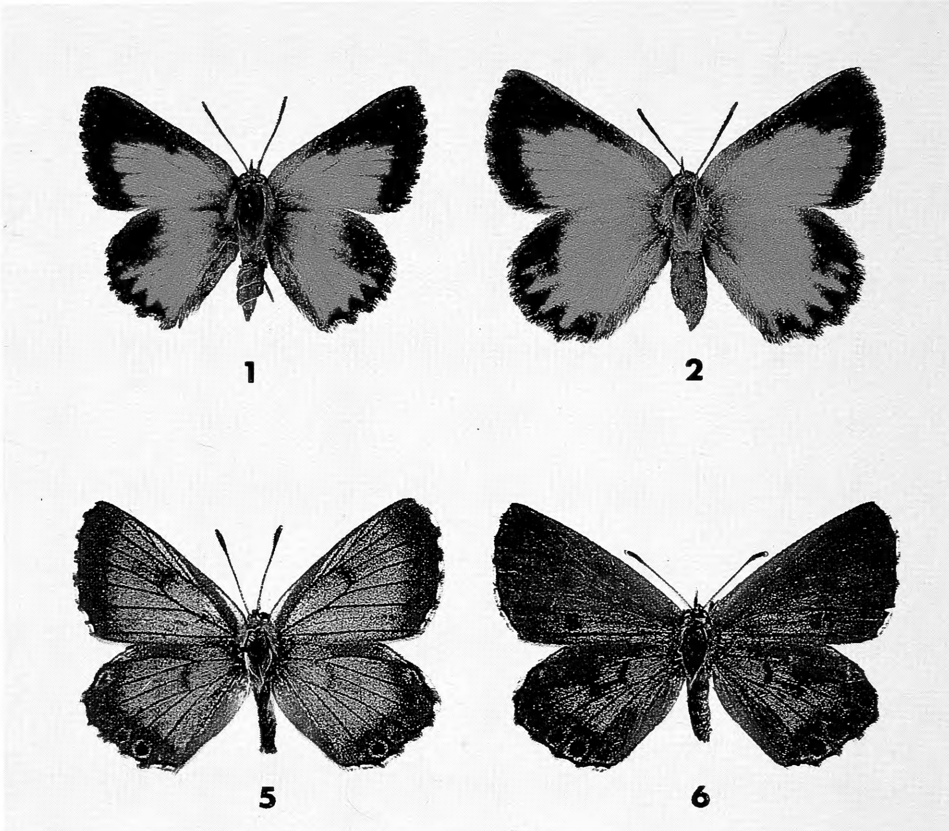


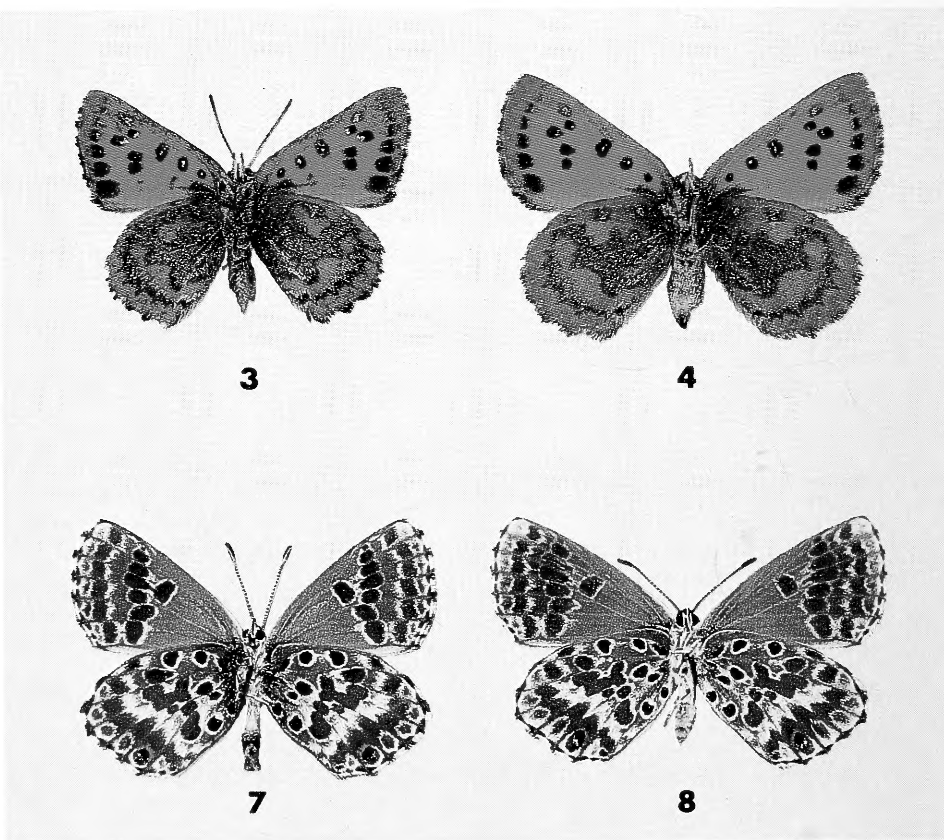


Photo: E. Marie Studios

# TWO NEW LYCAENID BUTTERFLIES FROM THE EASTERN CAPE PROVINCE

## Nos. 3 and 4

By E. L. PRINGLE B.A. (Natal) Llb. (U.C.T.)*

### A new *Lepidochrysops* Hedicke

This beautiful blue member of its Genus was caught for the first time on the 23rd November 1984 on the highest peaks of the Baviaanskloof Mountains at the source of the Baviaans River. In the description hereunder, comparisons will be made with its congeners, *Lepidochrysops australis* Tite and *Lepidochrysops braueri* Dickson, and also with *Lepidochrysops outeniqua* Swanepoel and Vari.

### *Lepidochrysops* **poseidon** spec. nov.

The body and ancillary parts are similar to that of *Lepidochrysops australis*, although the hairs on the thorax and abdomen are darker.

**Male** Forewing length: 17 – 20mm.
The apex of the forewing is more rounded than in *australis*, while the hindwing is less elongated in the vicinity of veins 5 and 6.

**Upperside:** The ground-colour is a plain dark blue, conspicuously lacking the purple sheen in the blue of *australis*, and the violet sheen in the blue of *outeniqua*; it also exhibits none of the light powdery blue characteristic of *braueri*. There is a very broad black margin on both wings, being in some cases up to 4mm wide. This margin is therefore broader than in either *braueri* or *australis*, being similar to that of *outeniqua*. The transition from the black margin to the blue ground-colour is not clear-cut, as is the case with *australis* and *braueri*, but is more gradual, with the black and blue markings noticably more suffused. The discocellular mark on the forewing is extremely broad, being much more well-developed than in all three of the afore-mentioned species. The corresponding mark on the hindwing is much narrower than that of the forewing.

The marginal row of spots on the hindwing is generally noticably less distinct than in *braueri* or *australis*, although a certain amount of variation does exist between individuals. The cilia are white, chequered with black, and the veins are distinctly black.

*Huntly Glen, Bedford 5780, Republic of South Africa.

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KEY TO PLATE

Fig. 1 *Aloeides pallida jonathani* Paratype. Male upperside. Fig. 2 Idem. Paratype. Female upperside. Fig. 3 Idem. Paratype. Male underside. Fig. 4 Idem. Paratype. Female underside. Fig. 5 *Lepidochrysops poseidon* Holotype. Male upperside. Fig. 6 Idem. Allotype. Female upperside. Fig. 7 Idem. Allotype. Male underside. Fig. 8 Idem. Allotype. Female underside.

**Underside:** The ground-colour is a dark grey-brown, much darker than in *australis*, and markedly greyer than in *outeniqua*.

As is the case with the entire *australis* complex, the basic pattern and positioning of the underside markings is the same, so will not be repeated in this description. However, the series of sagittate markings occurring postmedially in the hindwing tend to be narrower and less clearly defined than in *australis*, while the six discal spots of the hindwing are much less elongated. The spacing between the two black spots along the costa of the hindwing, as well as between the discocellular lunule and the black spot in the cell is also narrower than in *australis*, and not as suffused with white. This species may be fairly easily distinguished from *braueri* in that the seven postmedian spots of the forewing are narrower, and are curved inwardly in area 4. In *braueri*, these spots are always arranged in a straight line between vein 1a and vein 7. The series of white streaks beyond these spots is also markedly more lunulate than in *braueri*.

The species differs markedly from *outeniqua* by its comparatively more pronounced white markings, and in particular, by the more blunt sagittate markings on the hindwing.

**Female** Forewing length: 20 – 22mm.
Wings more rounded and more elongated than in the male.

**Upperside:** Ground-colour as in the male, but there is a far greater invasion of black into the areas of blue. In the case of the allotype, the wings are so heavily marked with black that the only blue which is evident is in areas 1a and 1b of the forewing, and in the immediate vicinity of the cell in the hindwing. In the case of the other specimens examined, the invasion of black is not as extreme. There is, in these specimens, a very broad costal and outer marginal black border on both wings. In the forewing, this black edging is extended further inwards in areas 1a and ab. All specimens examined show a very pronounced discocellular spot in the forewing, and a much narrower discocellular lunule in the hindwing. In all specimens, there is evidence of 5 elongated discal spots in areas 5, 4, 3, 2, and 1a of the forewing, and a further two discal spots in areas 4 and 5 of the hindwing. There is a pronounced marginal spot in area 2 of the hindwing; this is dark, with a blue ring, and bordered inwardly with a faint orange lunule. The cilia and the veins are as in the male.

**Underside:** The underside is the same as in the male, except that the white edging around the seven postmedian spots in the forewing is less pronounced. The ground-colour is also less grey, being of a slightly more brown colouration.

**Genitalia:** Comparisions made with the male genitalia of typical *australis* from the vicinity of Eseljagt in the South-West Cape has revealed very few differences between these two species. However, the terminal hook of the falces of this species is more fully semi-circular in its conformation; and the distal section which follows the tubular portion of the adeagus has a more pronounced taper from its mid-point to its termination.

This species was discovered by myself, my wife, my father, and Mr. Paul Liversidge on the 23rd November, 1984, in a joint expedition undertaken in order to investigate this hitherto unexplored area.

During the course of the day, a great number of blue *Lepidochrysops* were taken, flying about the highest ridges in the area. It was not until these were pressed that we realised to our astonishment that we had in fact found three separate and distinct species flying together. One of these species was undoubtedly *Lepidochrysops braueri*, while another was very similar to typical *australis* from the South-West Cape. This left a third, hitherto unknown, species, which is now described herein. To my certain knowledge, this is the first occasion that more than two *Lepidochrysops* of the *australis* group have been found flying together, and as such constitutes a small breakthrough in our understanding of the group.

A subsequent trip to the area undertaken by my wife and I on the 8th December, 1984 revealed more specimens, though a great number of these were worn.

The species was encountered singly, flying rapidly about rocky ridges and peaks in the area. It was interesting to note that my wife, my father, and I who were working the highest points in the area, came across specimens only of this new species. Mr. Paul Liversidge, however, who was working lower down, was able to secure all three of the species mentioned. It therefore appears that these three species may each be favouring different altitudes on these mountains: but this must yet be confirmed.

I am extremely grateful to Mr. Paul Liversidge for all his assistance, and in particular, for making his specimens available for research. I am also deeply indebted to Mr. C. G. C. Dickson for his helpful comments, and for undertaking to do the genitalia studies for this paper. My thanks also to Mr. C. W. Wykenham for making specimens of true *australis* available for comparison.

| | | | |
|---|---|---|---|
| HOLOTYPE: | "Baviaanskloof" | 24/11/1984 | P. S. Liversidge. |
| ALLOTYPE: | "Baviaanskloof" | 24/11/1984 | A. B. Pringle. |

PARATYPES: Data as for holotype and allotype 2 ♂ E. L. Pringle; 5 ♂ V. L. Pringle; 3 ♂ P. S. Liversidge; 3 ♂ 8/12/1984 (A.B.P.); 2 ♂ 8/12/1984 (E.L.P.); 2 ♀ 8/12/1984 (E.L.P.).

The holotype and allotype have been deposited at the British Museum (Natural History), London.

# NEW SUBSPECIES OF THE GENUS *ALOEIDES* HUBNER

This striking new race of the *Aloeides pallida* (Riley) group was discovered by Dr. Jonathan B. Ball, on the first of his many trips to the Kammanassie Mountains of the Eastern Cape Province. It was subsequently also found in the same area by the author, his wife, and his father over a period of years, from 1981-1984. In this description, comparisons will be made with its only close ally, *Aloeides pallida pallida* (Riley).

## *Aloeides pallida* **jonathani** ssp. nov.

The body and ancillary parts are similar to those of *pallida pallida*, except that in the male the body hairs are more distinctly purple in colour, and the eyes are, in all specimens examined, purple in colour. In all specimens of typical *pallida* examined, the eyes are consistently black in colour.

**Male** Forewing length: 15 - 19mm.

**Upperside:** Comes closest to *Aloeides pallida pallida*, except that the orange ground-colour is of a deeper colour, and the black markings are more intense. The extent and shape of these black markings is very similar to *pallida pallida*, but there is a tendency for the apical patch of the hindwing to be more restricted in size. There is a certain amount of variation between individuals in this respect, however, and this diagnostic feature should be treated with some caution.

The distal lunules on the hindwing are very pronounced, and more lunulate than in *pallida pallida*.

As in typical *pallida*, there is very little black scaling on the veins. The cilia are chequered with white, but since they are more heavily invaded by black, are not as pronounced as in typical *pallida*.

**Underside:** The orange ground-colour of the forewing is deeper than in typical *pallida* and the series of spots on this wing – although similarly placed – are more heavily marked with black, and their white markings comparatively reduced.

The most distinctive diagnostic features of this new race are contained in the hindwing. The ground-colour of this wing is purple, and it is extraordinary to see that none of the great number of specimens examined exhibit a variation towards a brown ground-colour. In all the other known races of *pallida* approximately half the specimens examined have a purple or mauve ground-colour, while the other half are brown.

The tone of this purple ground-colour varies in its depth between individuals and is in some cases invaded towards the base of the wing by a yellowish colouration – again, a phenomenon unique to this race. The characteristic underside markings of the hindwing are not white, as in typical *pallida* but are instead a dark grey, very sparingly flecked with white scales. The median band

is also markedly thicker than is the case with *pallida pallida*, fusing with the discoidal fascia to form a continuous and solid set of markings. The sub-marginal band is also more pronounced, and continuous from vein 7 right up to the anal fold. In most cases, both the median and sub-marginal bands are outwardly edged with black; while in the vast majority of specimens, the marginal dots are entirely absent: in the remainder, they are only very faintly apparent.

**Female** Forewing length: 19 - 21mm.
The wings are markedly more rounded than in the male.

**Upperside:** The ground-colour is of a lighter orange than in the male. It is interesting to note that this is consistent in all the specimens examined, whereas in the other races of *pallida*, the males and females normally have an identical ground-colour. In some instances, the females of *pallida littoralis* Tite & Dickson also exhibit a lighter ground-colour than the males – but this is not consistently the case.

As in the male, the black markings on the wings are more intense than in typical *pallida*, while on the hindwing the apical patch is generally smaller, with a certain amount of variation evident between specimens. The distal lunules are extremely pronounced – much more so than in any of the other races of *pallida* – while the cilia are comparatively suppressed.

**Underside:** As in the male.

The Kammanassie Mountains near Uniondale have proved themselves to be a naturalist's paradise, and a number of new species of Cape fauna have in recent years been discovered there. Among these are three new species of butterfly, all discovered as a result of the tireless work of Dr. J. B. Ball, and it is my pleasure therefore to name this new subspecies – now the fourth new butterfly from these mountains – after him.

These mountains lie between two well-known and extensive ranges of mountains – the Kouga and the Swartberg ranges – from which they are entirely isolated. Their isolation has obviously led to the evolution of the aforesaid species, and one cannot dismiss the possibility that this new subspecies may already have evolved to the point where it can be said to be an entirely new species. After all, it is completely isolated from any of the other known races of *pallida*, and probably has been for thousands of years.

However, a certain amount of variation between individuals, and the basic similarity between this insect and *pallida pallida*, has led me to adopt and perpetuate the present cautious approach towards this group. Only time, and a great deal more field work and research, will tell whether or not I am wrong in my approach.

The insect has been found in a fairly restricted area on flat ground covered with thick *Macchia* – type vegetation, high up in the Kammanassie Mountains. Its habits are the same as those of the other members of this group: once disturbed, it will circle rapidly about, before settling once more on nearby open ground or stones.

HOLOTYPE: "Kammanassie Mountain" 24/12/78 (Dr. J. B. Ball)

PARATYPES: "Kammanassie Mountain"
3 ♂ 24/12/78 (Dr. J. Ball), 1 ♀ 24/12/78 (J.B.B.), 1 ♂ 20/12/79 (J.B.B.), 8♂ 23/11/1984 (V.L. Pringle), 4 ♂ 3 ♀ 23/11/1984 (E.L. Pringle), 1 ♂ 23/11/1983 (A. B. Pringle), 4 ♂ 1 ♀ 23/11/1983 (E.L.P.), 1 ♂ 2 ♀ 16/12/1983 (A.B.P.), 1 ♂ 1 ♀ 12/12/1981 (E.L.P.).

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MYLOTHRIS CHLORIS AGATHINA (CRAMER) IN THE EXTREME WESTERN CAPE – I was most interested in the plate accompanying Messrs. Claassens and Dickson's paper concerning the above species (*Ent. Rec.* **98**:1-4). The figures are rather small, but writing from memory (my own descriptions and black and white photographs are in the British Museum (Natural History)) I can detect no difference between the Western Cape larvae and those from the Kenya coastal strip, and also those of the nomino-typical subspecies from Kampala. I have no recollection of any dull-red or red-brown intersegmental bands.

The authors unfortunately give no description of the pupa, but from the figure it would appear to be predominately brown. This is completely unlike pupae from the Kenya coastal strip, and also of the nomino-typical form from Kampala, whose pupae are black and white.

The principal foodplant of both sub-species bred by me is *Loranthus* spp. with *Osyris absyssinica* (Santalaceae) as an occasional alternative. D. G. SEVASTOPULO, PO Box 95617, Mombasa, Kenya.

MACROGLOSSUM STELLATARUM L. IN SOUTH DEVON – Single specimens of the humming-bird hawkmoth feeding on valerian at the north end of Slapton Sands were observed on 25th and 27th June and on 1st, 3rd, 13th and 14th July 1986. On 27th June a specimen turned up in my garden m.v. trap, some four miles from Slapton Sands. H. L. O'HEFFERNAN, 24 Green Park Way, Chillington, Devon TQ7 2HY.

# THE DISTRIBUTION OF THE RANNOCH BRINDLED BEAUTY (*LYCIA LAPPONARIA SCOTICA* HARRISON) IN SCOTLAND

By M. R. YOUNG* and R. KNILL-JONES**

The Rannoch Brindled Beauty (*Lycia lapponaria scotica*) was first discovered in Britain by Warrington, who found a male in Perthshire on 20 April 1871 (Guard Knaggs, 1871), and to judge from early succeeding records this may well have been at Rannoch. Since then it has almost always been regarded as a rather rare, highly localised species, largely restricted to "central highland" valleys such as Rannoch and upper Speyside; similar, therefore, to the known distribution of the Rannoch Sprawler (*Brachionycha nubeculosa* (Esp.)). However this impression is wrong and a succession of records have gradually revealed it to be more widespread than this.

In May 1984 a female was discovered by A. G. Payne at Leac Gorm, near Balmoral, Aberdeenshire (NO 22– 96– ) and, following this up, a larva was found by M.R.Y. feeding on Bog Myrtle at the same site. Later in 1984 R.K.-J. found larvae feeding commonly on Bilberry in Glen Loch, Perthshire (NN 98– 73– ) and then more recently M. B. Davidson found a further female at Inchrory, Banff (NJ 17– 07– ) in April 1985; this was in an area of mixed, dry, rather basic heathland, not including Bog Myrtle but including Bilberry and various heaths, and so similar in this respect to the habitat in Glen Loch. Leac Gorm, near Balmoral, by contrast, is a damp area of Bog Myrtle and *Molinia* in a stream valley bordered by drier, species-rich heather moorland.

These records seemed to extend the known distribution considerably and, more significantly, take it east of the Cairngorms, and this has prompted us to collate all the records that we could trace. The resultant map (Fig. 1) shows clearly that the species is much more widespread than usually believed and that it occurs in a wide band across the central highlands of Scotland.

There is no doubt that it is most common in the Rannoch area and in upper Speyside, where it seems to prefer damp moorland in stream valleys on the lower slopes of the hills, feeding as a larva on Bog Myrtle and various Heaths. This much has long been known and was clearly expressed by Cockayne (1904). In these habitats it is usually reported as emerging as an adult in April, or even late March in forward seasons.

The western records include a pair recorded on Bog Myrtle, near Connel, Argyll (NM 91– 32– ) by Edwards and Chalmers-

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**9 Crown Road South, Glasgow G12 9DT.

Hunt in April 1973 and males found by M. and G. Harper in 1960 in the Bog Myrtle slacks just east of Arisaig, Westerness (NM 6—— 6—— ), as well as several records from the moors near Fort William and from Ardnamurchan, where MacLaurin found larvae commonly on Bog Myrtle near Kilchoan (NM 4—— 6—— ) in August 1972. At this site some larvae were also found on Sallow and Ling.

Out own records can be seen to fit neatly at the eastern end of the central highland zone. Certainly the Deeside record is clearly east of the Cairngorm massif and as such is significant, but, although the Inchrory site is on the river Avon, a tributory of the river Spey, it is separated by only a low, open moorland pass of 2-3 km at 1500 ft from the Gairn, which is a tributory of the river Dee. Leac Gorm lies between the Gairn and the Dee and is only about 12 km from Inchrory, the intervening ground being mostly damp moorland where *L. lapponaria* might easily occur. This pass between the Avon and the Gairn may act as a regular route for passage between the Spey and Dee systems. Similarly Glen Loch, a tributory of the river Tay, comes close to the upper Geldie which drains into the Dee. The obviously anomalous localities on Fig. 1 are those of Flanders Moss, Stirling (NS 63– 98–) (MacLaurin, 1974) and of Achnasheen and Achanalt (NH 21– 60–) and Garve (NH 3—— 6——), Wester Ross. The original Flanders Moss record is for a female found on a Sallow bush in May 1924 but MacLaurin reports that he and his brothers could find no more, in spite of searching carefully in subsequent years. This record was then neglected, but on 21 July 1986 Christie found several nearly fully grown larvae there, feeding on Bog Myrtle, indicating that the colony is well established.

Unfortunately we have been unable to add further details to the record from Achnasheen and Achanalt, which is held by the Biological Records Centre and which dates from August 1980. At this date it must refer to larvae but no foodplant is noted. That from Garve is of a male, caught on 18 April 1978 in a Rothampsted Insect Survey trap, and these two records from Wester Ross suggest the moths occurrence along Strath Bran and Strath Garve. The next most north-western record is that of Howard (1978) for Tomdoun, Glengarry, Inverness-shire, which refers to an established colony at a stream valley where Bog Myrtle occurs, and where the main emergence period in 1978 was in mid-April. It seems reasonable to suggest that the species will be found in the intervening valleys, such as Glen Affric and Glen Strathfarrar, if a suitable search is made.

This species can obviously tolerate a wide range of climatic conditions, from the mild, damp region of Argyll and Westerness, where it occurs at sea level, to the more continental areas of upper Speyside and Deeside, at a height of 1500 ft. Furthermore, although

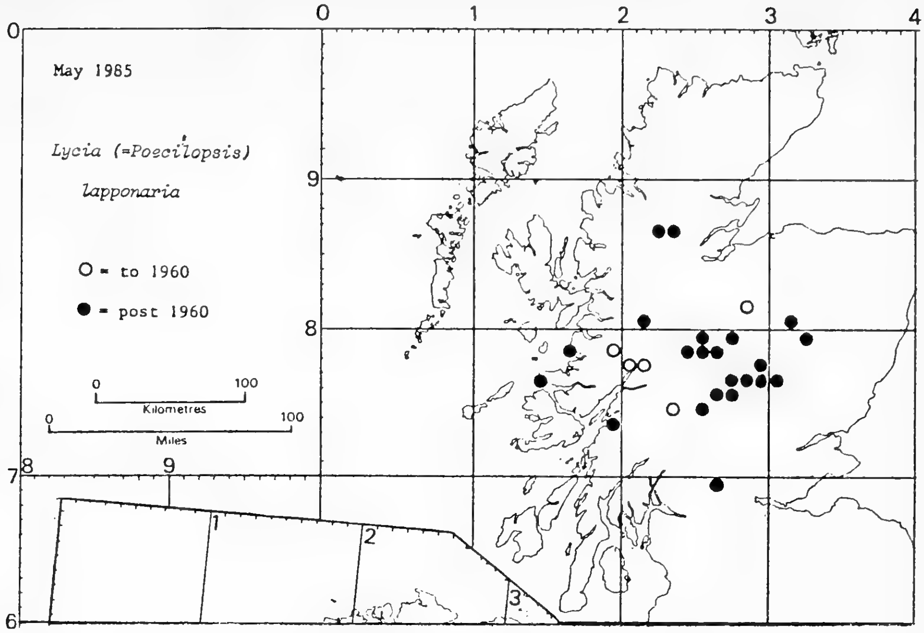


Fig. 1 The distribution of *Lycia lapponaria scotica* Harrison in Britain.

it seems to show a preference for Bog Myrtle and perhaps various Heaths, it will also readily accept Bilberry and Sallow as a larval foodplant, and this range of plants obviously occurs throughout the Highlands. In view of this it seems reasonable to suppose that it may be more widespread than current records show, and that the apparently anomalous localities on Fig. 1 are merely indicators of this situation. Since the moths emerge in April, or even late March, at a time when most entomologists visiting Scotland restrict themselves to Rannoch and Speyside, and since they are rather sluggish and cryptic, it is quite likely that they have been frequently overlooked. We believe that this species will eventually be found to be widespread through out the central Highland zone.


## Acknowledgements

We could not have collated these records without the generous help of B. Eversham, of the Biological Records Centre, who also provided the map. We are most grateful to him, as we are also to those who contributed records or comments; namely J. M. Chalmers-Hunt, I. Christie, M. B. Davidson, S. R. Davey, C. Edwards, M. W. Harper, A.MacLaurin, A. Payne, S. Parker and B. Skinner.


## References


Cockayne, E. A. 1904. On *Nyssia lapponaria. Entomologist,* **37**: 149-150.

Guard Knaggs, H. 1871. A new British Geometer. *Ent. mon. Mag.*, **7**: 282.

Howard, G. 1978. Macrolepidoptera of Glengarry and District (West Invernessshire) 1977-78. *Ent. Rec.* **90**: 255-261.

MacLaurin, A. 1974. Butterflies and Moths from Flanders Moss. *Glasg. Nat.*, **19**: 85-90.

LYCIA ZONARIA HARRISON (LEPIDOPTERA: GEOMETRIDAE) LARVAL FOODPLANT IN SCOTLAND — On a trip to the west coast of Scotland at the end of July 1986 I located a large number of larvae of this species feeding on yellow flag (*Iris pseudacorus* L.). The larvae were nearly full frown and quite easy to see; they were feeding in daylight eating from the straight edge of the leaf and producing characteristic semicircular holes one to two centimetres across. I can find no modern reference to flag as a foodplant for this species, but I received the impression that it was the preferred food in this locality. COLIN HART, Fourpenny Cottage, Dungates Lane, Buckland, Betchworth, Surrey.

DELTOTE BANKIANA FABRICIUS (LEPIDOPTERA: NOCTUIDAE) IN SOUTH-EAST KENT — On the night of 27th June 1986 in Ham Street Woods I was surprised to find a single specimen of this species attracted to light. This was a warm night with little wind and the fine conditions produced 106 species of macrolepidoptera including about fifty specimens of *Moma alpium.* COLIN HART. Fourpenny Cottage, Dungates Lane, Buckland, Bechworth, Surrey.

AN UNUSUAL VARIANT OF THE CATERPILLAR OF THE LIME HAWK, MIMAS TILIAE (L.) (LEPIDOPTERA, SPHINGIDAE). — On 18th Sept. 1985 a hawkmoth caterpillar, which had been found on a tree on Strand on the Green, Chiswick was handed to me for identification. It was small, little more than 3 cm. long, and I thought obviously less than half-grown. Its most noteworthy feature was the lack of lateral stripes save one at the rear; the tail was bright blue. I could find no illustration to match it. I took the caterpillar home and supplied it with a variety of foliage: lime, elm, sallow, poplar, apple etc. all of which were refused. I then lost it but later found it heading downstairs from my study. Clearly it wished to pupate and was therefore supplied with soil in a jar. By the 25th it had pupated and its small size at this stage indicated it was probably a lime hawk and so it proved to be. On the 3rd June 1986 or a little earlier a female with rather misshapen wings and damaged mouth parts emerged and promptly laid sterile bright green eggs. — B. VERDCOURT, Royal Botanic Gardens, Kew, Richmond, Surrey.

# THE DISTRIBUTION AND ECOLOGY OF *PHILOPEDON PLAGIATUS* (SCHALLER) (COL.: CURCULIONIDAE), WITH PARTICULAR REFERENCE TO INLAND RECORDS

By M. G. MORRIS*

## Introduction

Mr. R. W. J. Read, in an interesting note in this journal, has recorded the occurrence of *Philopedon plagiatus* (Schaller) at two inland sites in Cumbria (Read 1984). As he says, the weevil is most often found on sandy coasts and inland occurrences are few. In this short paper, I have attempted to bring together what is known about *P. plagiatus* in Britain, particularly concentrating on these inland records.

## Distribution

On the map (Fig. 1), the vice-county distribution of *P. plagiatus* is shown as given mainly by records in the literature. The distribution is portrayed conventionally, using a single symbol for at least one vice-county record, though in order to give some idea of the normal occurrence of the weevil on the coast these symbols have been positioned off-centre compared to the usual representation in the centre of each vice-county. It is evident that *P. plagiatus* is a very widely distributed weevil in the British Isles. It ranges from West Cornwall to East Kent, is well recorded from Wales, Scotland and Ireland, and extends into the Outer Hebrides, Orkney and the Shetlands (Zetland). It has not been recorded from a few coastal vice-counties: West Sussex, some of the vice-counties in N. Wales, Northumberland South, Mid-Lancaster, and Westmorland, several vice-counties in S. W. Scotland, and the vice-counties represented (three in each case) in the administrative counties of Cork and Galway in Ireland. There can be little doubt that many of these vice-counties are simply under-recorded and that suitable habitats exists in them where *P. plagiatus* is likely to be found.

The dates of the records are very variable, some being very ancient. The occurrence of the weevil in South Essex is based on Stephens (1831, 1839), while the records from Berwick are those of Selby (1844) and Murray (1853), and those for Edinburgh were published by Wilson & Duncan (1834), Murray (1853) and Stephens (1831, 1839). The record from Durham, though repeated by Wingate (1905) and Luff & Sheppard (1980), was originally given by Ornsby (1846).

*Institute of Terrestial Ecology, Furzebrook Research Station, Wareham, Dorset.

At the other extreme, many of the Scottish records are recent ones obtained during surveys of sand dunes and machair sites made by the Institute of Terrestrial Ecology for the Nature Conservancy Council in 1976-1977 (Duffey & Welch 1979). Only the records for the Outer Hebrides have been published (Welch 1979), but these show that *P. plagiatus* occurred, often in large numbers, at 20 sites in the main islands of North and South Uist, Benbecula, Harris and Lewis, and also in the Monach Islands. More recently, the islands of Barra, Vatersay, Pabbay and Bernaray have been added to this list (Waterston 1981), so that the weevil is known from at least 19 10-km squares in the Outer Hebrides.

Records from 16 of the vice-counties included in Fig. 1 have not previously been published. Unless otherwise stated, the records are my own: 19, North Essex; Colne Point, near Clacton, 15.vi.1967. 43, Radnor; Boughrood, swept from marginal, lush vegetation on shingle by R. Wye, 30.vi.1984 (Dr. R. S. Key). 44, Carmarthen; Bertwyn Sands, near Kidwelly, 27.ix.1965. 68, Cheviotland (Northumberland North); Embleton Bay, 13.vii.1972. 73, Kirkcudbright; Southwick Merse, 8.v.1967, etc. (Dr. R. A. Crowson). 75, Ayr; "many localities and dates, e.g. Gailes, 19.vi.1965" (Dr. R. A. Crowson *in litt.*). 85, Fife; Tentsmuir National Nature Reserve, 16/17.vi.1966; also recorded from Tentsmuir by Duffey & Welch (1979). 92, South Aberdeen; Don (Duffey & Welch 1979). 96, Easterness; Whiteness, (Duffey & Welch (1979). 97, Westerness; Sanna Bay, Ardnamurchan, Argyll, 31.vii.1973. 101, Kintyre; Machrihanish Links, 2/3.vi.1981 (Dr. R. C. Welch, *in litt.*). 105, West Ross; Big Sand, near Gairloch, 7.vii.1966. 106, East Ross, Morich More (Duffey & Welch 1979). 107, East Sutherland; Ferry Links, 2.viii.1975 (included in Duffey & Welch 1979). 108, West Sutherland; Invernaver N.N.R., Bettyhill, 28.vii.1972; Strathy Bay, 31.vii.1972, and recorded from all these sites and six others by Duffey & Welch (1979). 109, Caithness; Links of Greenland and Dunnet Links, 3/5.vii.1974; recorded from Dunnet and two other sites by Duffey & Welch (1979).

## Inland records

Records from the maritime vice-counties can include inland records as well as those from the coast, which are the greater number. In his Dorset list, Pearce (1926) included Coombe Wood; Wood Street, Wool; and Moreton as localities for *P. plagiatus*; these are about 4½, 5 and 9km from the sea, respectively, in a direct line. Combe Wood is interesting because it occurs on a patch of Reading Beds but is almost completely surrounded by Upper Chalk. I have taken the weevil on Wareham town walls, 12.vi.1981, about 2½ km from the sea, but in an extensive survey of 22 heathland sites in Dorset, using pitfall traps and vacuum netting, no *P. plagiatus* were found (Webb & Hopkins 1984).

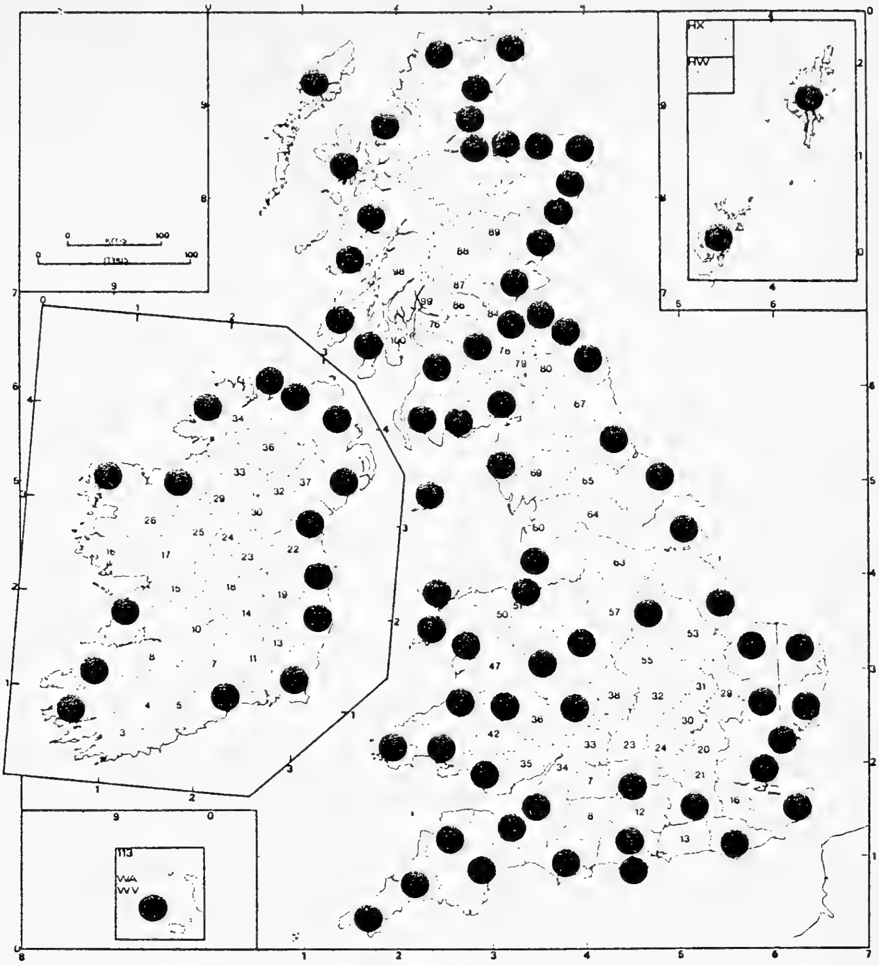


Fig. 1 The vice-county distribution of *Philopedon plagiatus* in the British Isles.

Newbery (1898) recorded the weevil from Foxhall Heath (or Plateau) near Ipswich, East Suffolk, which is a stony and sandy site about 12 km from the sea (though closer to the Orwell Estuary). The site, also known as Foxhall Crag. Pits, was included by Claude Morley in his list of the Coleoptera of Suffolk (1899) and was well known, principally as a site for the rare carabid *Harpalus froelichi* Sturm (Morley 1901). Another inland site for *P. plagiatus* is Risby Warren, near Scunthorpe, Lincolnshire, which is about 8 km from the Humber Estuary and much further from the open sea. Dr. R. S. Key found two dead specimens at the base of marram grass here (SE 933135) on 5.vii.1985 (*in litt.*). Finally, of course, there are the inland records from Cumbria which have already been referred to (Read 1984).

Perhaps more interest attaches to the occurrence of *P. plagiatus* in vice-counties which are entirely land-locked and much further

than just a few km from the sea. There are nine of these vice-counties (Fig. 1).

In Surrey, the weevil has been found in what appear, from the published records, to be at least three distinct sites, almost certainly in three different 10-km squares. Guildford is mentioned by Champion (1900, 1903 and 1915), and a site near Guildford more precisely specified as Compton Heath by Perkins (1915). Allen (1937) found *P. plagiatus* in a sandpit at Dorking, and it has occurred at Witley, a quite different part of Surrey (Champion 1903).

In Berkshire, the only published record of *P. plagiatus* appears to be N. H. Joy's for Wellington College (Fowler & Donisthorpe 1913). This locality is about 1½ km north of Sandhurst and close to the Surrey and, particularly, the North Hampshire borders.

The Suffolk Breckland is a well known area for the occurrence of many 'arenaceous' insects, and *P. plagiatus* is no exception. Most of the early records specify Brandon (Morley 1896, 1899; Jennings 1915), and the nearby Townstreet has also been mentioned (Anon. 1934). Freckenham was a popular collecting site at one time, although the locality is now largely destroyed as such by a combinataion of intensive agriculture and plantation forestry; Donisthorpe recorded the weevil there (1920) and between Mildenhall and Freckenham (1943). Other Breckland localities are Icklingham Plains (Morley 1908) and Barnham, near Thetford (van Emden 1952). My own records, for the period 1962-1966, are from Mildenhall, How Hill, Foxhole Heath and Lakenheath Warren. All the sites included here fall within the four 10-km squares TL67, 77, 78 and 87, and, as far as the records can be precisely located, in Suffolk. I have little doubt, however, that *P. plagiatus* is more widely distributed in the Breckland and that it extends into Norfolk.

The only inland records of the weevil which were specified by Fowler (1891) were for Worcester; Bewdley and Kidderminster were included on the authority of Blatch, but I have been unable to trace any published details. Worcestershire is a very poorly recorded county for Coleoptera, perhaps the least well known of all the English counties. However, Ashe (1921) found *P. plagiatus* at Hartlebury Common, about 2 km south of Kidderminster, though whether this was Blatch's original site cannot now be determined.

Tomlin (1908) recorded *P. plagiatus* from Staffordshire; this record appears to be that of Brown (1863) and from the Burton-on-Trent area. There are no details of the occurrence in Tomlin's account and I have not been able to refer ro Brown's original publication.

The only record of *P. plagiatus* in Shropshire is that of Pendlebury (1937). The rather uninformative details are that the weevil was collected in the Oswestry district by J. Hignett. Although he did not publish, Hignett was a respected coleopterist in his day

and was responsible for the discovery of the weevil *Polydrusus pilosus* Gredler in Britain (Donisthorpe 1935); the occurrence of *Philopedon plagiatus* in Shropshire is certainly not impossible but it would be desirable to know more about its habitat there.

The occurrence of the weevil at Boughrood, Radnor, in 1984 (Dr. R. S. Key), has already been detailed. This is a poorly recorded part of Britain and it is not impossible that other sites could be found in the area.

Bedwell's record of *P. plagiatus* in Sherwood Forest, Notts., was included by Fowler & Donisthorpe (1913) and Carr (1916), though he seems not to have published it himself. Carr also included records from Sherwood Forest by Taylor and by Tomlin. The date of Bedwell's capture was 10.vi.1908.

In Scotland, the only inland record of *P. plagiatus* appears to be that of Crowson (1971) for Dalserf, Lanark, where the weevil was found on the sandy banks of the Clyde.

Although the inland records of *P. plagiatus* cannot compare in abundance and extent with those from the coast, there is a substantial number, sufficient at any rate to dispel the notion that the weevil is a 'coastal species'. However, it is just possible that in some cases *P. plagiatus* could have been confused with the common *Cneorhinus plumbeus* (Marsham). In the 19th century, the latter was often included in the genus *Philopedon* (as *P. exaratus* (Marsham)). It sometimes occurs on sandy soils and occasionally is found with *P. plagiatus*. For instance, Carr (1916) records Bedwell taking both species apparently in the same sandy land at Edwinstowe, Sherwood Forest, on 10.vi.1908.

It should be noted that *P. plagiatus* is wingless and has fused elytra. This means that none of the inland records (or any others) could be due to immigration by flight.

## Life history and feeding habits

No detailed ecological study of *P. plagiatus* has been undertaken, but the outlines of its life history and ecology may be inferred from records of occurrence and by piecing together published anecdotal accounts of its feeding habits and other biological features.

Most records of live, adult *P. plagiatus* are from the early summer months of May and June. At the sites surveyed by Duffey & Welch (1979), pitfall traps were set from June to July and the catch collected three times during this period. Numbers were higher in the 'June' and 'June/July' catches than in the 'July' ones, though of course this may reflect activity rather than abundance (exact dates cannot be given because they necessarily varied from site to site). My own records show a preponderance of captures in May, with several occurrences in June and July and fewer in March

and April (Table 1). Again, these records, not being systematic, may reflect activity – in this case that of the collector. Dead specimens of *P. plagiatus* are often found, partly because they can be seen on open biotopes such as sand dunes. My few records of dead weevils are from the period May to September. Several of the occurrences brought forward in these notes as new vice-county records are based on dead specimens, which explains the late dates of a few of them. Only one of my specimens of living *P. plagiatus* was captured after July, but this weevil is of particular interest. It was taken under a piece of wood at Winterton Dunes N. N. R. on 14.ix. 1968, and both the deciduous pupal mandibles are intact. I have not taken any other *P. plagiatus* in this condition. Pupal mandibles are present in 'short-nosed weevils' (Otiorhynchinae and Brachyderinae) for a short period after eclosion of the adults. The weevils use them to dig their way out of pupation sites in the soil, but the mandibles are soon lost (Donisthorpe 1942). The inference would seem clear: larvae of *P. plagiatus* hatch from eggs laid in early summer and develop through the late summer, pupating and emerging as adults in the autumn; this would agree with the statement in Scherf (1964) that the species has a single annual generation. This is the normal life history pattern for weevils, particularly some of the 'short-nosed' species. For instance, leaf weevils, *Phyllobius* and *Polydrusus* species, are often abundant on broad-leaved trees from April to June, decline in numbers thereafter, and are seldom seen in August and following months, except in the north, where this timing is often delayed.

However, the occurrence of *P. plagiatus* in early summer may not be the universal experience. Wilson (1958), summarising Somerset records, noted that it occurred at Burnham in August, September, November and December 1944 (C. N. Hawkins), and again in April 1945; at Berrow in December 1944 (also Hawkins), and in June 1950 (J. Cowley). Records from Dunster (Wilson) and Minehead (Hawkins) were in May 1949 and 1948. No reference is made to dead specimens in the winter months, though this is a possible explanation of the records.

Moreover, the few records of larvae of *P. plagiatus* do not accord with the simple pattern of a single annual generation with active adults occurring from April to July. Van Emden (1952) obtained larvae taken on 14.x.1943 by D. Price-Jones in the Suffolk

| | Mar. | Apr. | May | June | July | Aug. | Sep. |
|---|---|---|---|---|---|---|---|
| Living | 1 | 4 | 23 | 13 | 8 | 0 | 1 |
| Dead | 0 | 0 | 1 | 1 | 2 | 1 | 2 |

Tabe 1 Numbers of occurrences of *Philopedon plagiatus* by months, all sites, authors's own records.

Breckland, a single larva collected on 25.v.1936 by Donisthorpe at Swanage, Dorset, and two larvae taken by R. Siemss at Lübeck, North Germany, in April 1934. Van Emden also reared larvae from adults collected on 14.v.1943 in Suffolk (i.e. from eggs laid by the adults). He does not state how long these larvae, which appear to have included last instar individuals, took to develop. though the inference is that they did not overwinter. The occurrence of larvae, probably mature, though this is not stated, in April, May and October does not seem to be compatible with a simple annual life cycle, unless the time of pupation of larvae in the autumn and early winter is very variable. A possible explanation is that development does, or can, take two years. What seems certain is that emergence of active adults in the spring is synchronised, for, unlike most weevils but in common with other 'short-nosed' species such as the leaf weevils, living adults do not seem to be generally obtainable during winter (but cf. Wilson 1958).

Scherf (1964) and others state that *P. plagiatus* feeds on marram grass (*Ammophila arenaria*) and, as Read (1984) says, it is normally associated with that plant. However, most short-nosed weevils (except Sitonini) are polyphagous and there can be no doubt that this is the case with *P. plagiatus*. Apart from the records quoted by Read, nearly all inland populations must feed on plants other than *A. arenaria*, as its distribution is entirely coastal, except for very few introductions (Perring & Walters 1972). The larvae reared by van Emden (1952) came from Breckland adults fed on couch grass (*Agropyron repens*). Seventy years ago, Fryer (1915) showed that *P. plagiatus* was polyphagous, citing Dutch works on its attacks on peas, rhubarb and roses, and his own observations of weevils from Guernsey feeding on runner beans. The association of this weevil with marram grass seems to be a case where the foodplant is the commonest species of the 'yellow dunes' which the weevil normally inhabits. Evan in this biotope, I have seen adults eating other plants, such as saltwort (*Salsola kali*). Champion (1915) and Perkins (1915) gave examples agreeing with Fryer's observations that the weevil is a very polyphagous species, though both authors were quoting from inland experience. Fryer compared *P. plagiatus* with *Otiorhynchus picipes* F. (*singularis* L.), a species with notoriously catholic tastes.

## Habitat and habitat changes

*Philopedon plagiatus* is not strictly a coastal species and is not greatly restricted by its choice of food. The common feature of all its localities is that they are very clearly sandy or arenaceous. The exact nature and origin of the sand at the sites seems to be unimportant. The Dalserf, Lanark, site was a sandy river bank, i.e. alluvial (Crowson 1971), as, presumably, was the Boughrood, Rad-

nor, locality. The Breckland sands are derived from loess and glacial boulder-clay; in some places there are accumulations of blown sand. The Surrey and Berkshire sites are on Tertiary sands and the Worcestershire ones on Bunter sandstone, which is also exposed to the east of Oswestry, Salop (cf. Pendlebury 1937).

The other characteristic of most sites recorded for *P. plagiatus* is that they are open, that is, sparsely vegetated. Sandpits feature as many of the inland localities, particularly those in Surrey. It seems likely that inland sites have become fewer or smaller as vegetation has become denser in response to lack of rabbit grazing and scratching, following myxomatosis, though there is no evidence for this. Afforestation, particularly in the Breckland, has almost certainly reduced the abundance and range of *P. plagiatus* there.

**Acknowledgements**

I am grateful to Dr. R. A. Crowson, Mr. P. J. Hodge and Mrs. J. Morgan for information about the distribution of *P. plagiatus* in Scotland, southern England and North Wales, respectively, and to them and Drs. R. C. Welch and R. S. Key for permission to quote unpublished records. Dr. Key's records were provided through the good offices of Dr. I. F. G. McLean. The Institute of Terrestrial Ecology and the Nature Conservancy Council allowed me to use records obtained during commissioned research. The Institute's Biological Records Centre provided the outline vice-county map.

**Note added in proof**: Dr. M. L. Luff has kindly provided recent records of *P. plagiatus* from Northumberland: Alnmouth (VC 68, NW 2410), 9 July 1979, and Seaton Sluice (VC 67, NZ 3277), 30 May and 4 July 1980. The latter site is a new, or at least a confirmed, vice-county record.

**References**

Allen, A. A., 1937. *Aleuonota aurantiaca* Fauv., and other beetles in the Box Hill District, *Entomologist's Rec. J. Var.* **49**: 136-7.

Anon., 1934. [no title], *Trans. Suffolk Nat. Soc.* **2**(3): clviii.

Ashe, G. H., 1921. Coleoptera in Worcestershire, 1920, *Entomologist's mon. Mag.*, **57**: 90.

Brown, E., 1863. *Fauna of the nighbourhood of Burton-on-Trent,* J. van Voorst.

Carr, J. W., 1916. *The invertebrate fauna of Nottinghamshire,* J. & H. Bell, Nottingham.

Champion, G. C., 1900. *Compsochilus palpalis* Er. etc. at Woking, *Entomologist's mon. Mag.* **36**: 162.

Champion, G. C., 1903. Coleoptera at Guildford and Godalming, *Entomologist's mon. Mag.* **39**: 278-9.

Champion, G. C., 1915. *Philopedon geminatus* F. as a general feeder, *Entomologist's mon. Mag.* **51**: 219.

Crowson, R. A., 1971. Some records of Curculionoidea (Coleoptera) from southern Scotland, *Entomologist's mon. Mag.* **107**: 47-52.

Donisthorpe, H. St. J. K., 1920. A new locality for *Dryophilus anobioides* Chevr. and some other Coleoptera from Freckenham and Barton Mills, *Entomologist's Rec. J. Var.* **32**: 153.

Donisthorpe, H. St. J. K., 1935. *Polydrosus pilosus* Gredler (Curculionidae, Col.) a species of Coleoptera new to Britain, *Entomologist's mon. Mag.* **71**: 37-8.

Donisthorpe, H. St. J. K., 1942. Pupal mandibles in the Curculionidae, *Entomologist's Rec. J. Var.* **54**: 22-3, 36-7.

Donisthorpe, H. St. J. K., 1943. Coastal insects found inland, *Entomologist's mon. Mag.* **79**: 125.

Duffey, E. & Welch, R. C., 1979. *The invertebrate fauna of dune and machair sites in Scotland* (Unpublished report to NCC).

Emden, F. I. van, 1952. On the taxonomy of Rhynchophora larvae: Adelognatha and Alophinae (Insecta: Coleoptera), *Proc. zool. Soc. Lond.* **122**: 651-795.

Fowler, W. W., 1891. *The Coleoptera of the British Islands,* **5**: 208-9, L. Reeve & Co., London.

Fowler, W. W. & Donisthorpe, H. St. J. K., 1913. *The Coleoptera of the British Islands,* **6** (supplement): 306, L. Reeve & Co., Ashford.

Fryer, J. C. F., 1915. The food-plant of *Philopedon geminatus* F., *Entomologist's mon. Mag.* **51**: 193.

Jennings, F. B., 1915. On the food-plants of some British weevils, *Entomologist's mon. Mag.* **51**: 167-9.

Luff, M. L. & Sheppard, D. A., 1980. The Coleoptera of Castle Eden Dene: a supplement, *Vasculum* **65**: 53-60.

Morley, C., 1896. A day among the Deal sand-hills. – The beetles of old coastlines, *Entomologist's Rec. J. Var.* **8**: 231.

Morley, C., 1899. *The Coleoptera of Suffolk,* J. H. Keys, Plymouth.

Morley, C., 1901. The completed history of *Harpalus frölichii* Sturm. as a British insect, *Entomologist's mon. Mag.* **37**: 64-6.

Morley, C., 1908. The insects of the Breck. *Trans. Norfolk Norwich Nat. Soc.* **8**: 579-86.

Murray, A., 1853. *Catalogue of the Coleoptera of Scotland,* Blackwood, Edinburgh.

Newbery, E. A., 1898. *Harpalus froelichi* Sturm (*tardus* Pz.): an addition to the British list, *Entomologist's mon. Mag.,* **34**: 84-85.

Ornsby, G., 1846. *Sketches of Durham,* Andrews, Durham.

Pearce, E. J., 1926. A list of the Coleoptera of Dorset, *Proc. Dorset nat. Hist. antiq. Fld Club* **47**: 51-128.

Pendlebury, W. J., 1937. Entomology. Coleoptera. *Rec. bare Facts Severn Vall. Fld. Club* **46**: 14.

Perkins, M. G. L., 1915. The food-plant of *Philopedon geminatus* F., *Entomologist's mon. Mag.* **51**: 266.

Perring, F. H. & Walters, S. M., 1972. *Atlas of the British Flora* (2nd ed.), E. P. Publishing, Wakefield.

Read, R. W. J., 1984. Two inland records of *Philopedon plagiatus* (Schaller) (Col.: Curculionidae), *Entomologist's Rec. J. Var.* **96**: 31-2.

Scherf, H., 1964. Die Entwicklungsstadien der Mitteleuropäischen Curculioniden (Morphologie, Bionomie, Ökologie), *Abh. senckenb. naturforsch.* Ges. **506**: 1-335.

Selby, P. J., 1844. List of insects taken by Mr. Hardy in June and July 1843 in the neighbourhood of the Pease Bridge, *Hist. Berwicksh. Nat. Club* **2**: 110.

Stephens, J. F., 1831. *Illustrations of British Entomology. Mandibulata.* **4**: 123-125, Baldwin & Cradock, London.

Stephens, J. F., 1839. *A manual of British Coleoptera:* 244, Longmans, London.

Tomlin, J. R. le B., *in* Page, W. (edit.), 1908. *The Victoria History of the County of Stafford,* **1**: 87-96.

Waterston, A. R., 1981. Present knowledge of the non-marine invertebrate fauna of the Outer Hebrides, *Proc. R. Soc. Edinb.* **79B**: 215-321.

Webb, N. R. & Hopkins, P. J., 1984. Invertebrate diversity on fragmented *Calluna* heathland, *J. appl. Ecol.* **21**: 921-933.

Welch, R. C., 1979. Survey of the invertebrate fauna of sand dune and machair sites in the Outer Hebrides during 1976, *Proc. R. Soc. Edinb.* **77B**: 395-404.

Wilson, J. & Duncan, J., 1834. *Entomologia Edinensis or a description and history of the insects found in the neighbourhood of Edinburgh. Coleoptera,* Edinburgh.

Wilson, W. A., 1958. *Coleoptera of Somerset, Proc. Somerset, archaeol. nat. Hist. Soc.* **101 & 102** (suppl.): 1-167.

Wingate, W. J., *in* Page, W. (edit.), 1905. *Victoria History of the County of Durham* **1**: 98-113.

COLIAS CROCEUS (GEOFF.) — In Devon one clouded yellow was observed to settle on White Clover at Start Point, Devon, SX820376, on the 26th June, 1986 the wind was southerly. A. J. BALDWIN, 33 Defoe Avenue, Kew Gardens, Surrey.

# A HISTORY AND INVESTIGATION INTO THE FLUCTUATIONS OF *POLYGONIA C-ALBUM* L.: THE COMMA BUTTERFLY

By COLIN PRATT*

(*continued from page 250*)

## Causal theories

Several chroniclers put forward conjectures as to why the Comma had fluctuated so greatly in range and numbers, with most concentrating on climate; some other elements, such as loss or change of habitat, were quickly eliminated – "the places it frequented remain practically unaltered throughout the country" (Frohawk, 1914). Also "there is no suspicion of extermination by over-collecting, nor of destruction by fire or flood" (Barrett, 1893). It was thought that the answer might lie "in effects produced upon the atmosphere by increase of population, or by products of combustion, whether from houses, factories, or railway engines" (*loc. cit.*) but there is no correlation between the distributions of *c-album* and a recent quantitative map of atmospheric pollution (Dobson, 1979) – and later national pollution levels were considerably higher than those of last century. In Kent it was thought that the butterfly's decline was "certainly not due to collectors, and is possibly due to altered agricultural conditions" (Bull, 1897) but, as will be shown, this was not the case in this particular instance.

The large-scale expansion of range ceased for a few years after 1935 and there were two events that could have contributed to this interruption; entire broods of larvae of the Comma's near relatives *A. urticae* and *I.io* are known to have been eaten by the inordinately high numbers of wasps prevalent during 1935 (Fletcher, 1936) and there was a severe frost on May 17th which was said to have killed all butterflies on the wing at the time (Tulloch, 1936) and larvae were also killed. However, there is no evidence that *c-album* was adversely affected in other great wasp years or by other late frosts.

The insect was apparently not especially prone to attacks by parasites, although *Pimpla flavonotata* Holm. and *Pteromalus puparum* Swed. have been bred from the early stages (Buckler, 1885) and its near relative *A. urticae* is sometimes heavily affected (Beirne, 1955).

Generally, it is thought that birds do not significantly affect numbers; the spine protected larvae of *c-album* are unpalatable

*5 View Road, Peacehaven, Newhaven, Sussex.

when full grown but they are vulnerable to avian attack during early instars (Carrick, 1936). As an adult, the Comma has been specifically ignored by a Spotted Flycatcher (*Muscicapa striata*) whilst taking *I.io* L. (White, 1953), and yet eaten by Sparrows (*Passer domesticus*) (Warry, 1961). Insectivorous birds and especially Sparrows did increase over the years of the butterfly's decline but no corresponding decrease has taken place during the years of expansion.

It has been suggested that the butterfly declined relatively recently in the New Forest because the "over-planting of conifers has led to the disappearance of sallow in the ridings" (Fraser, 1961), thereby leading to a paucity of bloom on which the adults were thought to almost exclusively feed after hibernation. Even if true, this effect would only operate locally.

## The hop as foodplant

Some 40 different insects have been reported as feeding on Hop, *Humulus lupulus* L. (Theobald, 1925), of which about a dozen are macro-lepidoptera and two are butterflies – *Inachis io* L. and *Polygonia c-album* L. In addition to hop, in the wild the early stages of the Comma have been noted as feeding on stinging nettle (*Urticae dioica* L.), both common and wych elm (*Ulmus glabra* Hud. and *U. procera* Sal.), various currants (*Ribes* spp.), and rarely on Hornbeam (*Carpinus betulus* L.) and Hazel (*Corylus avellana* L.); other feral foodplants listed include raspberry, honeysuckle, thistle, sloe, and willow (Kirby, 1909).

An indeterminable amount of the distribution of hop is due to escapes from the brewing industry's early hop-gardens, although it is thought to be native in England and Wales; examination of the plants distribution (Perring & Walters, 1976) reveals a striking similarity with that of *c-album* when at the height of its range in this country. Almost all of the distribution of purely commercial hop-growing (Parker, 1934; Coppock, 1964) is within that of the Comma's – but when its range was most restricted; to a large extent this similarity also extends to Europe, although all these coincidences could be climatic.

Detailed histories of hop culture have been published (Parker, 1934; Mathias, 1959; Burgess, 1964). Hop was a naturalised growth by 1428 but in 1511, or 13 years later, plants were introduced from the continent for the then newly fashionable brewing of beer. It was to be almost half a century before hop-gardens spread rapidly but by 1573 it was an established branch of agriculture. The first gardens were established at Maidstone and Canterbury – Kent being geographically well situated because of its climate, soil, access to London dung and casual labour – and after about a decade in Norfolk, and later at Farnham and the Severn Valley. It was after the

late 16th century that the practise spread from the south-east to the midlands. The national acreage increased over the 17th century and picked hops arrived from Holland at this time and during the following century when large quantities were recorded. By 1724 the national area under hop totalled more than 23,000 acres with over three-quarters grown in Kent, Sussex, Worcestershire, Surrey, Hampshire, and Herefordshire; more than 5000 acres were grown outside of these six counties. During the 18th century 6000 acres were grown near Canterbury alone, although much was grubbed out in 1780, hops were planted in abundance in Herefordshire, and smaller amounts were successful in Nottinghamshire, Suffolk, and elsewhere in the west midlands; by 1776 the plant was even being experimented with in Scotland, although comparatively little was grown north of the Trent, and Farnham was called the first hop capital of Britain. But a decline in the acreage farmed outside of the six prime counties took place – by 1822 the area had more than halved and half a century later only a tenth of the original area still grew hops. Nevertheless in 1870 hops were still cultivated in 53 counties – 40 in England, eight in Wales, and five in Scotland – as far north as Aberdeenshire; but this was to be the peak as a dramatic drop in distribution immediately took place. At this time more than 99% of the country's total hop acreage was situated in the foremost six counties, with two-thirds in Kent. The last hops were grown in Scotland in 1871 and in Wales in 1874, then, "as the acreage fell away hops went out of cultivation almost entirely in all but the half-dozen counties" (Parker, 1934). Within these hop-growing heartlands the acreage peaked in 1878 at more than 71,000 acres; this slowly declined until 1887 when a sharper fall occurred, due to reduced demand and better yields through increased pest control. By 1909 the national acreage had halved and in 1917 had halved again. This depressed acreage of less than 20,000 acres has been maintained ever since. The future of the industry is currently under threat from a recent EEC ruling which allows "exposure to the rude gusts of market forces, world over-production and continental hops" (Sunday Times, 23/6/85); now, less than 8000 acres are cultivated in Kent and a third of the growers have gone out of business over the last decade.

Although imports had come from all over the continent and some of the British colonies of the era, the comparative quantitative distribution of commercially grown hops has changed little since the latter part of the 19th century; as at present, just before the Second World War about two thirds of the country's acreage was still grown in Kent and the far east of Sussex, with much of the remainder being situated in Herefordshire and Worcestershire. Of course, although the distribution and acreage of commercial hop-growing had collapsed, the plant was (and is) still widespread – but the

unusually advantageous opportunities for *c-album* had gone.

More than half of the hop varieties grown about 20 years ago were old established strains but changes in the remainder were most unlikely to have affected the Comma as all strains of hop are thought to be botanically inseparable.

There is no evidence to show that *c-album* was an economically serious pest on hop in this country over the last hundred years – although "thóusands" of pupae were mentioned at a Leominster hop-garden in 1875 (Barrett, 1893). But there is no doubt that hop was the insects primary foodplant throughout most of the last century and just previously; Moses Harris (1770) wrote that the larvae "generally feeds on the leaves of hop, but is sometimes found on the nettle"; in the mid-19th century it was said that larvae fed on various plants "especially hops" (Westwood, 1854); towards the end of that century the celebrated Mrs. Hutchinson called it "very common in hopyards" in Herefordshire and at about the same time similar remarks were made about the Maidstone hop district (Newman, 1871). Later, Dale (1890) mentioned that second brood larvae "would appear to prefer hop" and that "when the hop-picking season comes on, the caterpillars and also the chrysalides are found in much larger numbers"; and the foremost authority of the era, Barrett (1893), agreed on the species foremost foodplant. But due to the decline of hop-culture, by the begining of the First World War no lesser an authority than Frohawk (1914) said that "it's chief and natural foodplant is the common stinging nettle"; this has recently been confirmed by modern observation (Heath *et al*, 1984). On occasion, hop will no doubt locally still be the species primary foodplant, although pesticides would now keep these occurrences to a minimum in the remaining hop-gardens; equally, there were places where probably stinging nettle was always to the fore, such as north Wales (see Gardner, 1913). Almost all authorities researched who defined the primary foodplant of the Comma before the turn of the century chose hop and the vast majority of those after that time chose the ubiquitous stinging nettle – and the individual records of discovered larvae confirm this statement. It has been suggested that larvae fed on different foodplants depending upon brood, where "the second brood would appear to prefer hop, but as that plant is scarcely in leaf when the first brood are feeding, the early caterpillars must of necessity find other food" (Dale, 1890) – this being currant and stinging nettle (Hutchinson, 1881).

There is some truth in the statement that "the Comma of older days was primarily a hop feeder, and that it disappeared through newer methods of hop spraying" (Lewis, 1951). As the acreage under hop increased after the late 16th century this no doubt led to an increasing incidence of associated insect pests,

which would have included *c-album*. The first mention of pest control on hops was as early as 1697 when it was recommended that plants should be sprinkled with an infusion of Wormwood. Much later, during the 1860's, dusting powders of soot and lime were used in an attempt to control flea beetle; at the same time sprays of soft soap and quassia extract began to be used – but the practise did not become general before 1883. After this time, insecticidal spraying prevented disastrous crop failures and contributed to the decline in acreage through increased yields. At the turn of the century at Malvern the butterfly was listed as "formerly plentiful in hop-yards, but since the introduction of "hop-washing" much less abundant, and probably still decreasing" (Edwards & Towndron, 1899). After the First World War it was said of lepidopterous larvae on hop that "damage is rarely important and they are much less common than they were before the widespread use of insecticides" (Burgess, 1964) and that larvae of the Comma were now only found on the plant "from time-to-time"; in other late books on the pests of hops the species is not even mentioned. In 1949 systemic insecticides such as Schradan were first introduced and these completely revolutionised pest control on hops. Therefore there will never be a return to those halcyon days when Mrs. Hutchinson had "about one thousand larvae and pupae brought me from the few hop-grounds in our parish" (Hutchinson, 1881) of Grantsfield, in 1875; nor even in Yorkshire, where previously the butterfly had been reported as "alighting in hundreds on the blossoms of the common wild Scabious" (Morris, 1870).

On occasion, there were direct losses from human intervention, as specimens were sometimes obtained "with difficulty, some enterprising collector having circulated advertisements in the local papers of the hop-growing districts in Herefordshire and Worcestershire, as well as posting placards in the villages, to offer to take all the larvae and pupae the hop-pickers could find, at a certain rate" (Buckler, 1886). However, the numbers enjoyed by *c-album* were sometimes so vast in these districts before pest control became efficient as to render these attentions negligible besides those of the hop-growers; as a measure against pests, there was a habit "of collecting all the bine after the gathering is over and burning it, and thus all the larvae and pupae which have not been destroyed, when the poles are torn down and the hops gathered, perish in the fire, excepting those which have emerged and thus escape destruction . . . it has been sad to see the destruction of larvae and pupae" (Hutchinson, 1881).

It has been suggested that, after the loss of a hop-feeding race due to changes in hop-spraying methods, the species "re-established itself through immigrants which were primarily elm feeders, dislodged from which they can usually find nettle" (Lewis,

1951). Part of this is not quite as controversial as might at first be thought, as it has been concluded of lepidoptera as a whole that "there may be two or more biological races within a single species, each race selecting a particular foodplant" (Allan, 1943). Also "when a species has been reared for several generations on one of several alternative host plants, the progeny will tend to select the same host plant on which they were reared . . . . it is also possible . . . that in any given species there may be many heterozygous strains with all the possible combinations of host plant preferences. If this is the case, there may be a selective action of the environment in eliminating all the progeny which have a tendency to choose other host plants than those upon which they hatch" (*loc. cit.*); it has been recorded that some species are unable to successfully complete there development after feeding readily on some alternative plants (Balfour-Browne, 1944). Local races of *c-album* have been reported; one feeding on nettle and another on sallow in Somerset (Heslop, 1967), and on stinging nettle in north Wales (Gardner, 1913). Nationally, however, as has been shown, the insect largely retreated to the midland hop-growing areas, regaining territory from these strongholds, and any later tendency in foodplant preference would therefore have been biased towards hop; internationally, vagrants apart, the case for the occurrence of arrivals from the continent, elm feeding or otherwise, is less than proven. However, as the Welsh experience shows, there were races which fed on stinging nettle when the insect was at its nadir in this country and it has been shown that there was a change in the foremost foodplant at about that time, brought about by the collapse of commercial hop-growing; whether the change was due to polyphagous *c-album* losing hop as a preferential opportunity, or became a change in dominence within monophagous races, either way the cause remains the same.

There is recent evidence of local changes in primary foodplant (Baker, 1977); stinging nettle was reportedly the foremost pabulum for the Comma in south London earlier this century but in nearby north-west Surrey it was discovered to be elm in 1969 – until Dutch Elm disease forced a change to sallow, hop, and gooseberry, during the 1970's. As the numbers of *c-album* were said not to have been affected, this shows that the species can have sudden changes in foodplant forced upon it in the wild, at least locally with those plants, without noticeable loss. Unless the predominence of an exclusively hop-feeding race is accepted, this runs contrary to any conclusions of widescale loss of territory due to the decline of hop-growing. Nevertheless, due to the mode and speed of loss of individual hop-gardens (grubbing up, virtually overnight) there can be little doubt that there were significant local numerical losses and perhaps even local extinctions from this cause.

Despite several statements to the contrary, such as "the cause of its disappearance cannot be associated with cultivation or with any other interference with its requirements" (Frohawk, 1914), hops were not grown commercially in Scotland after 1871 or in Wales after 1874; in England, outside of the prime hop growing counties the acreage declined throughout the 19th century and its distribution completely collapsed after 1870. The butterfly was last recorded in Scotland in about 1870 and it disappeared from an accelerating number of English counties during that same decade. Also, hop washing, bine burning, and the increasing deployment of more efficient pesticides after the early 1880's contributed to local rarity.

(*to be concluded*)

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MUD-PUDDLING BEHAVIOUR OF THE GREEN-VEINED WHITE BUTTERFLY. — Mud-puddling behaviour is a well documented and common phenomenon of male butterflies of tropical and mediterranean regions, but is of less common occurrence in temperate regions. The principal stimulant to these male aggregations is described as sodium salt (Arms *et al., Science,* **185**: 372-374.) and large groups of males usually congregate and feed on damp ground contaminated by faeces and urine, presumably these areas are rich in available amino-acids.

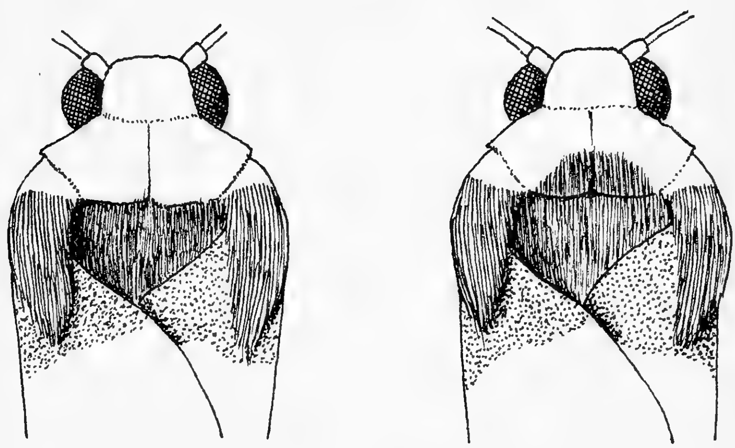
On 5 August 1986 I was visiting a coniferous area of woodland in north Bucks., a sunny but cool day after an evening of very heavy rain. On one 300 metre length of ride I noted seven aggregations of feeding male green-veined white butterflies, at the edge of puddles. Each group of males was densely packed, with approximately one to five centimetres between individuals. The total number of males within each group were; 37, 21, 18, 17, 14, 13 and 6. No other aggregations of this butterfly were noted at any other puddles on this or any other ride. Close examination of the attractive and non-attractive puddle margins revealed no evident differences between the puddles themselves and no signs of faeces. However, those puddles that were attractive were all immediately adjacent to vegetation that had been mown within the previous week. Presumably the heavy rain of the previous evening had washed the soluble products of decomposition into these puddles, these being attractant to this butterfly. What is of interest is whether this is a rare phenomenon or is more common than generally believed. Also, is sodium salt involved in instances as described here? T. G. SHREEVE, 4 Chiltern Close, Princes Risborough, Aylesbury, Bucks. HP17 0EA.

# A FURTHER DIAGNOSTIC FEATURE FOR THE SEPARATION OF *EILEMA LURIDEOLA* ZINCKEN AND *E. COMPLANA* L. (LEP.: ARCTIIDAE)

By ADRIAN M. RILEY*

The standard diagnostic feature for the separation of these two species is the attenuation of the costal streak at the apex of the forewing in *E. lurideola.* In *E. complana* this streak remains parallel to the costa through to the wing fringes. (See Skinner, B. 1984. *Colour Identification Guide to Moths of the British Isles,* p. 180).

However, in the field, or when dead, unset, individuals are being examined it is difficult to use this character as these two species (particularly *complana*) roll their wings around their bodies in roughly tubular fashion, often hiding the forewing apices from view. Under these circumstances it is often better to use the following alternative feature.



*Eilema complana* *Eilema lurideola*

Figure 1 shows the head and mesothoracic regions of the two species. In *E. complana* the patagia are completely orange, resulting in a straight border between themselves and the mesothorax. This gives the appearance of a neat "collar". In *E. lurideola* the patagia are grey in the centre, resulting in a C-shaped "collar".

Although the grey centre to the patagia is mentioned in some descriptions of *E. lurideola* (e.g. Heath, J. 1979. *Moths & Butterflies of Great Britain & Ireland.* Vol. 9, p.94) it has never been stressed as a useful diagnostic character. However, I have found it to be the most reliable and convenient feature to use when identifying Rothamsted Insect Survey light trap catches or live specimens in the field.

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# BUTTERFLIES ON MADEIRA IN APRIL 1985

By D. F. OWEN,* T. G. SHREEVE and A. G. SMITH

The butterfly fauna of Madeira is remarkable in several ways. There are only 14 species but of these one, *Pararge xiphia*, is endemic and three, *Gonepteryx cleopatra, Pieris brassicae* and *Hipparchia aristaeus*, have evolved endemic subspecies. Three species, *Danaus plexippus*, *Artogeia rapae* and *Pararge aegeria*, have colonised the island in relatively recent times; the most recent, *P. aegeria*, was first seen in 1976 (Higgins 1977), making Madeira the only place in the world with two sympatric species of speckled woods. There are also two symphatic red admirals, *Vanessa atalanta* and *V. indica*, both of which occur on the Canary Islands. Several vagrants have been recorded including *Hypolimnas misippus* (from tropical Africa), *Colias hyale* and *Issoria lathonia* (both presumably from the Mediterranean region), the latter once a common resident (Baker 1891), but not seen in recent years (Lace and Jones 1984). Gardner and Classey (1960) provide a comprehensive list of the literature on Madeiran insect life; the most up-to-date accounts of Madeiran butterflies are Swash and Askew (1982) and Lace and Jones (1984).

We visited Madeira between 9 and 15 April 1985 with the intention of the examining the spread of *P. aegeria* and its possible impact on the endemic *P. xiphia*; the results of our investigations on these two species will be published separately. We recorded ten of the 14 Madeiran butterflies. The two graylings not recorded occur later in the season, while *G. cleopatra* and *P. brassicae* were expected but not seen, possibly because of the time of year, or possibly because both species are less common than they used to be as a consequence of a decrease in the amount of laurel forest (their natural habitat on Madeira) and an increase in cultivation and forestry operations that make use of non-native species of trees. During the week we explored all the major habitats on the island. Cloud, rain and cold severely restricted the activities of butterflies at higher elevations, particularly in the laurel forest, where conditions were rarely suitable for butterflies to fly. The following species were recorded:

*Artogeia rapae* (small white). Widespread but by no means common in waste areas and among cultivation, especially around Funchal, but also recorded at Faial on the north coast and at Canical in the east. This species first appeared on Madeira in 1971 (Swash and Askew 1982), and there was a mass invasion, presumed to be from Portugal, in 1974 (Wolff 1975). We found a mated pair east of Canical on 14 April but no other evidence of breeding: a quick search of cultivated cabbages revealed neither larvae nor damage by larvae.

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*Colias croceus* (clouded yellow). Common in open areas at most elevations but especially near sea level on the tree-less Ponta de São Lourenço where on 14 April dozens of females were egg-laying on clovers and vetches. Two individuals of the female form *helice* were positively identified and there may have been others.

*Lycaena phlaeas* (small copper). A female at Eira de Fora on 14 April is the only record. De Worms (1964) likewise found one only during a week's collecting in April 1964. The small copper is described as locally common on Madeira and some specimens are very dark in coloration (Baker 1891) which suggests a distinct subspecies. However, our specimen is like a typical European small copper.

*Lampides boeticus* (long-tailed blue). In ones and twos at many sites but nowhere common. A female was seen egg-laying on broom near Faial on 9 April.

*Vanessa atalanta* (red admiral). Positively identified once only: Botanical Gardens, Funchal, 12 April, but several times may have been confused with the commoner *V. indica.*

*Vanessa indica vulcania* (Indian red admiral). Two or three adults in the Botanical Gardens at Funchal and eight small larvae feeding on nettles, *Urtica* sp. (possibly *dioica*) growing in the shade of a tree. Three more adults were seen near Tabua where a few larvae were found on the same species of nettle growing in the shade of a banana plantation. Another larva was found on this same species of nettle near the north end of the runway of the International Airport. An adult was collected near Queimadas on 11 April. Larvae brought back to England were fed on stinging nettle and four adult butterflies were eventually reared. In March 1985, D. A. S. Smith saw six females laying eggs on *Urtica* sp. (presumed to be *dioica*) at Puerto de la Cruz and Agua Mansa, Tenerife. He also found larvae at both sites. These nettles were also growing in the shade. The food-plant of *Vanessa indica vulcania* was apparently hitherto unknown. (Higgins and Riley 1980), possibly because the females lay on nettles in the shade, unlike *V. atalanta* which prefers nettles growing in the open.

*Cynthia cardui* (painted lady). Abundant on Ponta de São Lourenço but not seen elsewhere, except for a single individual just outside Funchal. Larvae in all stages of development were found on thistles and mallow, especially on disturbed waste land bordering the roadside east of Canical. From larvae brought back to England we reared 17 adults from mallow and 22 from thistle, most slightly darker than the five specimens collected as adults.

*Pararge xiphia* (Madeiran speckled wood). This endemic is found everywhere except in the more open places near the coast, the high plateau country and the São Lourenço peninsula. It is probably the commonest butterfly on Madeira. An egg was found on *Holcus*

*lanatus* and two eggs and three larvae on *Brachypodium sylvaticum* at Achada do Cedro Gordo; a larva was found on *Agrostis gigantea* and 14 larvae on *B. sylvaticum* at Boca da Encumeada; and another three larvae on *B. sylvaticum* near Queimadas. Hence our findings suggest that *B. sylvaticum* is the chief food-plant. All the larvae were in the third or fourth instar. *P. xiphia* larvae have conspicuously longer tails than those of *P. aegeria* and the two species are easy to tell apart.

*Pararge aegeria aegeria* (speckled wood). First recorded at Ribeiro Frio in 1976 (Higgins 1977), this butterfly is now widespread and common at low elevations, especially along the south coast, and shows signs of colonising many upland areas as well. It is especially associated with disturbed habitats: we found it among terraced cultivation, banana plantations and in gardens where *P. xiphia* was often absent, but in many places, particularly in the hills, the two species fly together. Two fourth instar larvae found on *Brachypodium sylvaticum*, one at Monte, the other at Achada do Cedro Gordo.

*Danaus plexippus* (monarch). Single specimens at various localities in the vicinity of Funchal, notably in the Botanical Gardens where at least three individuals were present on 12 April. Two larvae and many eggs were found on three plants of *Gomphocarpus fruticosus* growing on waste land west of Funchal. This milkweed is a native of sub-Saharan Africa where it is a common food-plant of *Danaus chrysippus*. A. J. Showler tells us that in January 1984 he found several larvae on *Asclepias curassavica* (a tropical American milkweed) in the Municipal Gardens, Funchal. These might be the first definite breeding records of the monarch on Madeira.

## References


Baker, G. T. 1891. Notes on the Lepidoptera collected in Madeira by the late T. Vernon Wollaston. *Trans. ent. Soc. Lond.* 1891: 197-221.

De Worms, C. G. M. 1964. Madeira in the spring, April 1964. *Ent. Rec.* **76**: 252-254.

Gardner, A. E. and Classey, E. W. 1960. Report on the insects collected by the E. W. Classey and A. E. Gardner expedition to Madeira in December 1957. *Proc. Trans. S. Lond. ent. Nat. Hist. Soc.* 1959: 184-206.

Higgins, L. G. 1977. The speckled wood (*Pararge aegeria* L.) in Madeira. *Ent. Rec.* **89**: 22-23.

Lace, L. A. and Jones, M. J. 1984. Habitat preferences and status of the Madeiran butterfly fauna. *Bol. Mus. Mun. Funchal* **36**: 162-176.

Swash, A. R. and Askew, R. R. 1982. A survey of Madeiran butterflies, 1981. *Bol. Mus. Mun. Funchal* **34**: 60-66.

Wolff, N. L. 1975. On the sudden mass occurrence in 1974 of *Pieris rapae* L. (Lepidoptera, Pieridae) in Madeira. *Bol. Mus. Mun. Funchal* **29**: 26-32.

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A NOTE ON THE PROBABLE HABITAT OF CRYPTOPHAGUS FALCOZI ROUBAL (COL., CRYPTOPHAGIDAE) — In Britain, *C. falcozi* has been found in the wild only in Windsor Forest (Owen 1982 *Entomologist's mon. Mag.* **118**:22). The first examples found there (21.i.1981) were in a rotten branch of beech lying on the ground below an old dead beech tree.

In spite of repeated searching, no more specimens could be found at the site but some months later, in a different part of Windsor Forest about 4km distant, I found some in the hollow stump of another beech tree which had been blown down some months previously. While the tree stood, its hollow base had communicated with the outside by a small hole at ground level. The stump was about 1.5m high and was composed of a shell of wood, soft and rotten on the inside with hard bark on the outside. The beetles were found by sieving rotten wood and debris from inside the stump. I do not know for how long the beetles continued to breed in the stump but they were still to be found there some 12 months later, that is about 18 months after the tree had been blown down and the interior of its hollow base exposed.

Recently (22.v.86), I found about a dozen examples of the beetle in debris from inside the hollow stump of another ancient beech tree which too had been blown over. It was about 1km from the second tree. There were a few old fruiting bodies of a *Ganoderma* sp. (probably *applanatum*) inside and outside the shell of the stump. While the tree stood, there had been a small hole linking the hollow inside to the outside at ground level.

The great similarity between the second and third sites, strongly suggests that the natural habitat of *C. falcozi*, at least at Windsor, is inside the hollow base of ancient beech trees. Until the tree blows down, this will often be (to coleopterists) a virtually inaccessible habitat which could explain the very few records for the species anywhere in its range. On this basis, the first examples taken must have comprised a temporary colony.

Examples of *Aeletes atomarius* (Aube) were present in both the hollow stumps. In Britain, this is a rare species (though not so rare as *C. falcozi*) and could possibly be an associated marker species. J. A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

# THE CONTROL OF OLIVE LARVAL COLOUR IN *SATURNIA PAVONIA* LINN. (LEPIDOPTERA: SATURNIDAE)

By DR. M. E. N. MAJERUS*

In 1981, on a visit to the Loire Valley I collected 3 larval nests of *Saturnia pavonia*. The larvae were all in their second and third instars, each nest was probably the product of a single female. Surprisingly, the resulting fourth and fifth instar larvae were extremely variable. This variation was due firstly to the amount and pattern of the green and black markings, which showed a range in the fourth instar from some individuals which were virtually all green to all black individuals. Secondly there was great variation in tubercle colours which were white, pink, yellow or orange. The imagines resulting from these larvae, supplemented occasionally with wild caught, Cambridgeshire males, have been used to set up stocks for studies into the genetics of this larval variation. The results to date suggest that while there is a high genetic component to both these aspects of larval variation, the genetic mechanisms are quite complex, and in the case of the green and black markings the variation is probably regulated by a polygenic system. In this note I wish to describe the discovery of an aberrant larval form and its genetic control.

The larvae from one of the crosses (brood BE7) reared in 1982 produced 21 fourth instar larvae. The fourth and fifth instar ground colour of 3 of these was abnormal, the normal bright green colour being replaced by an olive green colour. These 3 larvae were separated from the rest of the brood. Only 2 emerged. They, and 2 of their sibling imagines, were used in further crosses in 1983. In addition another cross (BE56) in which neither parent came from BE7 produced a small number of olive larvae. Progeny from these broods were again used in crosses in 1984. The results of all these broods are given in Table 1. Because of the limitations of time and space only a proportion of larvae in most broods were retained to the fourth instar. Thereafter the larvae and cocoons were retained until adults emerged. All larvae were fed on hawthorn throughout. The larvae were scored for ground colour in the fourth instar. None of the larvae changed their basic ground colour between the fourth and fifth instars.The number of imagines produced from each colour class of larvae was also recorded for each brood.

The most probable explanation of the data is that ground colour is controlled by a single biallelic gene, with the green ground colour dominant to olive, the olive allele being semi-lethal when homozygous.

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It is suggested that one of the parents of the original larval nests carried the olive gene, and that brood BE7 was a cross between two heterozygotes. Further it is suggested that the parents of BE56, BE156, BE159, and the female parents of BE62 and BE67 were also heterozygotes carrying both the green and olive alleles. In this case BE7, BE56, BE156 and NE159 should each have given a 3:1 ration of green to olive larvae. However, in all these broods the number of olive larvae is less than a quarter the number of greens, though not significantly so. Broods BE62 and BE67 should have given a 1:1 ratio of green to olive, and this is close to observation although in BE67 there is again a deficiency in the number of olives.

Brood BE134 the only brood in which both parents had been of the olive ground colour, all progeny were olive. In this brood the female produced 226 ova from which only 15 larvae hatched, and only 1 imagine was produced despite meticulous care and attention being lavished on the brood throughout. Indeed as Table 1 shows of the 42 fourth instar larvae which were scored as olive, only 9 (21.4%) reached the adult state while in the same broods, 86 adults were produced from 100 green scored larvae. This strongly suggests that the olive allele is semi-lethal, possible causing both reduced fertility and reduced viability.

Finally cross BE180 in which the female parent came from a new and normal stock taken in Cambridge endorses the dominance of the green ground colour over olive, all progeny being green.

| Brood number | Origin and larval colour of parents | | Number of larvae in 4th instar. Number of resulting imagines given in brackets | |
|---|---|---|---|---|
| | Female | Male | Green | Olive |
| BE7 | France normal | France normal | 18(16) | 3(2) |
| BE1 | France normal | France normal | 55(52) | 0 |
| BE8 | France normal | France normal | 23(8) | 0 |
| BE25 | France normal | France normal | 50(50) | 0 |
| BE26 | France normal | France normal | 38(33) | 0 |
| BE56 | BE25 normal | BE8 normal | 37(32) | 8(1) |
| BE62 | BE26 normal | BE7 olive | 6(6) | 8(0) |
| BE67 | BE7 normal | BE7 olive | 10(9) | 5(4) |
| BE69 | BE1 normal | BE7 normal | 83(80) | 0 |
| BE70 | Cambridge normal | Cambridge normal | 194(161) | 0 |
| BE134 | BE67 olive | BE67 olive | 0 | 11(1) |
| BE156 | BE67 normal | BE67 normal | 18(12) | 5(1) |
| BE159 | BE67 normal | BE67 normal | 11(11) | 2(0) |
| BE180 | BE70 normal | BE67 olive | 50(46) | 0 |

Table 1 Results of broods reared to elucidate the inheritance of olive larval ground colour in *Saturnia pavonia.*

# Notes and Observations

TRACHEA ATRIPLICIS LINNAEUS, THE ORACHE MOTH, IN KENT. - On the evening of 8th August 1986, I went to Dungeness with the prime objective of looking for specimens of *Thalera fimbrialis* Scop. When I set up my lights, I did so on my own there being no other entomologists on the shingle that night. Probably just as well, as I have found that most good things seem to head for other entomologists' trap if there is a choice. It was a mild evening with light variable winds, following a period of mainly south-westerly winds.

The early part of the evening was spent splashing about around the edge of a pond watching both male and female *Acentria ephemerella* D. & S., (*nivea* Ol.) hurtling about over the surface. I could find no trace of the rudimentary winged female form in the weed or litter round the pond, but the winged forms of both sexes were very common. Back at the light, probable migrant moths were not common, and I recorded five *Autographa gamma* L., and three *Agrotis ipsilon* Hufn. Throughout the evening I noted sixty-six species of macrolepidoptera, and at 1.45 am, with very little moth movement, decided to pack up my lights.

I was therefore startled to find a female *Trachea atriplicis* Linn., the orache moth, sitting in a trap. I was aware of specimens taken on the Essex coast the previous month, but was not expecting this particular green moth in Kent, so much later. The specimen was carefully boxed and kept in the hope of eggs. In view of the manner in which it battered itself to pieces over the next few days, I might as well have used thumb and forefinger, but it did lay about one hundred and twenty eggs, none of which proved fertile. I kept my lights running on until dawn but without any further excitement.

This appears to be the first record of the orache moth for Kent. It would be interesting now to know if the continental populations of this moth have undergone any unusual expansions of range or size, to lead to records in England after such a long absence. Perhaps our continental friends could comment on any such changes. DAVID WILSON, Joyce House, Green Tye, Much Hadham, Herts.

THE FAUNA OF SAND DUNES AT ALVOR (PORTUGAL) AND LANZAROTE (CANARY ISLES) – Although marine sand dunes appear to present a remarkably similar and consistent environment throughout Europe and the Mediterranean, their arthropod fauna differs widely between one place and another. For instance, the false-scorpion *Dactylochelifer latreillei* Leach is found throughout Britain, as is the salticid spider *Marpissa* (= *Hyctia*) *nivoyi* (Lucas) (Cloudsley-Thompson, J. L., 1959, *Entomologist's Mon. Mag.* **95**: 24); but *M. nivoyi* does not appear to occur in the Bay of Biscay where *D. latreillei* is also common (Cloudsley-Thompson, J. L., 1960, *Entomologist's Mon. Mag.*, **96**: 49-53), while I found neither

species among the dunes at Pamuok in south-western Turkey (1945, *Entomologist's Mon. Mag.*, **108**: 165).

In September 1984, and August 1985, I visited the dunes at Alvor, West of Portimão in southern Portugal and, in September 1985, dunes on both the north, north-east, and the south coasts of Lanzarote, Canary Isles. In none of these did I find either *D. latreillei* or *M. nivoyi.*

The dunes at Alvor appeared to me to be more sparsely populated than those at Pamuok, but I found a number of grasshoppers there as well as sphecid and mutillid wasps, a few scarabeid beetles and three species of Tenebrionidae which Dr. R. A. Crowson kindly identified for me as follows: *Blaps* sp., *Tentyria* sp. (most common) and a species of *Zophosis* and of *Isocerus* (or perhaps *Dendarus).* During the day they buried themselves on the shaded sides of the tufts of marram grass, whence they emerged at about 17.30h and could be collected as they walked on the surface on the dunes. Here they left numerous conspicuous tracks, especially the *Blaps* and *Tentyria* sp. I also obtained a nymph of the masked assassin bug *Reduvius personatus* (L.), for naming which my thanks are due to Ray Aldridge. It was camouflaged by particles of sand adhering to a viscid substance on its cuticle. This is by no means a new observation: indeed the phenomenon is illustrated by S. W. Frost (1942, *General Entomology,* New York. Fig. 384), but it was new to me. T. R. Odhiambo (1958, *Entomologist's Mon. Mag.*, **94**: 47) recorded similar camouflaging habits in nymphal stages of the reduviid *Acanthaspis petax* Stal. in Uganda. The only spiders I found were yellow juveniles of a species of Araneidae, and juveniles of two lycosid species, one of which was sand-coloured and extremely cryptic.

The dunes at La Calete on the north end of Lanzarote were almost sterile, but I found an immature *Theridion* sp. among the clumps of *Sueda*. At Arrieta, on the north east, and at Papaguayo on the south – where the dominant was a leafless composite shrub, *Zollikoferia spinosa* (kindly identified by Richard Bailey) – I could not find any spiders or insects other than a fly or two. The temperature and relative humidity on the surface of the sand was 37°C, 38% RH at 13.00h (La Calete, 16 September) 31°C, 60% RH at 17.00h (Papaguayo, 15 September) and 25°C, 65% RH at 23.00h (Puerto del Carmen, 15 September) – measured with a Kane – May electronic thermohygrometer (KM8000). These very moderate readings reflect the equable climate of the Canary Isles: the sparseness of the flora and fauna of Lanzarote is undoubtedly due to the infrequency of rain. – J. L. CLOUDSLEY-THOMPSON, Department of Biology, Birkbeck College (University of London), Malet Street, London WC1 7HX.

SCOTTISH INSECT RECORDS – In a recent issue (*Entomologist's Rec. J. Var.* **98**: 123) Dr. I. D. Wallace recorded a pterophorid moth, *Capperia britanniodactyla* (Gregson), from a Scottish locality and stated that he had "not been able to trace any other Scottish records". This prompts me to draw attention to a powerful research tool called the Scottish Insect Record Index (SIRI) that we maintain here at the Royal Museum of Scotland (formerly the Royal Scottish Museum). Among several functions, the SIRI provides a fairly reliable and easy means of checking whether there are existing published records of particular species of insects occurring in Scotland.

The SIRI is an index only to *published citations* (i.e. it does not include existing but unpublished specimens in collections, or manuscript records) but, because it is based on a wide and comprehensive survey of both old and modern literature, we believe it to be reasonably complete in this respect. The records are divided into Orders, within each of which the literature citations are arranged alphabetically according to the specific name as published. (Therefore synonyms must also be checked). For several years it has been energetically maintained by a competent entomologist, Dr. Joan Basden, and it is currently less than one year behind the present for most sources. The information for each entry is given in the form : binomen as published; vice county number (or other regional data); journal or book reference (to page only). It is necessary to check these references in order to evaluate what is said : some entries could be negative reports, or reiterations of past records. For example, this note will be indexed under *C. britanniodactyla* even though it brings forward no new record. Researchers, in the broadest possible sense, can either visit the museum and (by prior arrangement, please) consult the SIRI themselves, or else they can contact the Museum's staff and we will be pleased to look for information on a limited number of species for them. We are, however, regrettably unable to answer requests like "please send all Scottish records of such-and-such a group": for more than a small number of species, I am afraid that you would usually have to visit us to consult it yourself. The maintenance of this important resource always has to compete for funds, and it is therefore desirable that users (including those who find no records of the species that concern them) acknowledge the Scottish Insect Records Index maintained here in their publications.

The recent records of *C. britanniodactyla* in Scotland traceable through the SIRI are as follows:–

i. *Proc. Trans. Br. ent. nat. Hist.; Soc.* **14** : 25 (1981). VC 83. (A specimen taken by Dr. K. P. Bland on 5.vii.1980 on Blackford Hill, Edinburgh and exhibited at the B.E.N.H.S. Annual Exhibition on 1.xi.1980).

ii. *Proc. Trans. Br. ent. nat. Hist. Soc.* **15** : 36 (1982). VC 83. (A reared series from the same site, exhibited by Dr. Bland at the following year's Exhibition on 24.x.1981).

iii. *Entomologist's Rec. J. Var.* **96** : 257 (1984). VC 72. (This records Dr. R. P. Knill-Jones' capture of this species at Tynron (misspelt "Tynson" in the paper), Dumfriesshire in 1982).

iv. *Glasg. Nat.* **21** : 95 (1985). VC 75 and VC 86. (Recording captures at Ailsa Craig by P. Wormell and at Fintry and Ballantrae by I. C. Christie).

A number of old records in the SIRI (as *teucrii*) would need more critical assessment owing to early confusions over the identification and nomenclature of this and related species. — M. R. SHAW, Royal Museum of Scotland, Chambers Street, Edinburgh EH1 1JF.

ANASPIS COSTAI EM. & MORDELLISTENA HUMERALIS L. (COL.: MORDELLIDAE) IN S. E. LONDON. — I have long kept a look-out in my home district for four not uncommon *Anaspis* spp. which might be expected to occur; namely *frontalis* L., *pulicaria* Costa, *rufilabris* Gyll. and *costai* Em. (The continued absence of the first is strange since it is regarded as one of the generally common species.) Two years ago I managed to find there a solitary *A. pulicaria*, while this year (1985) I have at last taken a single male *A. costai*. Like the former, this was in Maryon-Wilson Park, Charlton, and was shaken from fragmentary remnants of hogweed flowers (unfortunately scarce in the locality) on 17th August. Previous records for the London suburbs, if any — under the name *flava* v. *thoracica* — are early and unsatisfactory; Lewisham and Brockley, by W. West in 'Woolwich Surveys', must be suspect because he has no record under *A. subtestacea* Steph. (now *lurida* Steph.) which is common enough hereabouts and far likelier to have been the species actually taken. The VCH list for Kent (Fowler, 1908) gives no record for East Kent; I took the species at Doddington in that vice-county in 1965 (5.viii). It may be added that Fowler's datum (*l.c.*: 166) "On hawthorn blossom" (under *flava* v. *thoracica*) is inapplicable to *A. costai*, a late summer species not appearing until July.

On the occasion of taking this insect at Charlton as above, I obtained also four examples of the uncommon *Mordellistena humeralis* L. (the usual British form coloured like *neuwaldeggiana* Panz., see Allen *in press*) from a late but still fresh hogweed umbel — the last anywhere in the vicinity — and a further four in the course of the

next few days. Except for one similarly in the same park in 1973, this was my first find of the beetle locally. Since the above very deceptive form of *M. humeralis* has up to now been confused in Britain with *M. neuwaldeggiana*, most records of the latter will require checking. A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7.

TWO INTERESTING 'MICROS' FROM WINDSOR, BERKS. — Occasionally when collecting in the eastern end of Windsor Great Park near what used to be the 'Long Walk', I have met with considerable numbers of *Ochsenheimeria vacculella* F.v.R. ensconced under pieces of dry bark or dead wood on the trunks of oaks (e.g. 7.viii.82). I do not remember having come across the species while working that habitat in other localities, and though this rather peculiar habit is well known, it probably ensures that the moth is less often seen by lepidopterists than by coleopterists. It certainly is quite different from that of our other two species of this grass-feeding genus.

On 27th June 1985, near Bears' Rails Pond further south in the Park, when scanning the trunk of a field maple for signs of an Anobiid beetle, I detected and tubed a small white-marked black moth, unknown to me, sitting on the bark. This Mr. E. C. Pelham-Clinton tells me is the Psychid *Narycia monilifera* Geof., a species which though fairly widely ranging can hardly be called common, and which seems worth a mention in case there is no previous record for the area. Its condition is such that it may have recently emerged; and indeed its larval case could well have been on the bark close by, but unnoticed because of my ignorance (at the time) of the insect's identity or life-history. — A. A. ALLEN.

A VISITOR FROM AMERICA — On 6th May 1986 I found a pupa case on a stem of *Asparagus plumosa* (imported from Florida, USA), in New Covent Garden Market. The case was just 2 inches long, reminiscent of a zygaenid. The moth emerged on 25th May and was kindly identified by Mr. M. Honey of the BM(NH) as *Artacia cribraria* (Ljungh) (Lep.: Lasiocampidae). The prefered host plants are various species of oak under which the asparagus is grown in Florida. R. T. LOWE, 61 Erskine Hill, London, NW11.

EUCINETUS MERIDIONALIS LAPORTE (COL., EUCINETIDAE) IN SURREY. — I found an example of this beetle on the underside of a small piece of sound, dressed wood lying on sandy ground at the edge of small pine plantation on Ockham Common, Surrey on 20/5/83. Since then, I have searched for other examples at the site on a number of occasions but always unsuccessfully and I thought that I should record this singleton now before I forget to do so, especially as the beetle has hitherto been recorded only from Hampshire, the Isle of Wight and Suffolk (see Owen 1983 *Entomologist's mon. Mag.* **119**:198).

The site at Ockham Common is at the edge of a motorway which was nearing completion at the time when I found the beetle. In all probability, the piece of wood was brought to the site in the process of road-way construction. The beetle too may have been transported there although the similarity of the site to that at which I found the species at Elveden (also at the edge of a small pine plantation) and the fact that on both occasions the beetles were found on the underside of a piece of wood lying on sandy ground suggests that the Ockham Common example probably bred locally. J. A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

CAPTURE OF THE IMAGO OF SYNANTHEDON ANDRENAEFORMIS (LASPEYRES): ORANGE-TAILED CLEARWING. – Baker (in Heath J. ed., 1985. *Moths and Butterflies of Great Britain and Ireland,* **2**: 369-388.) describes the imago of *S. andrenaeformis* as "except when newly emerged in early morning, seemingly non-existent". This resulted in the species being considered extremely rare before the discovery of the larval foodplant, although it is now known to be widespread across the downland of southern England. On 16th July 1986 I visited Westcott Downs in Surrey looking principally for hoverflies. The day was very hot, and insects seemingly scarce, most flowers being apparently unattractive. However, on reaching a small group of limes which were in flower, the situation changed. The lime blossoms were alive with insects; hoverflies, bees and even several species of butterfly, and it was then that I netted an insect in flight which was seen to be *S. andrenaeformis*. Whether it was actually attracted to the flowers is open to question, but the site was some distance from the clumps of wayfaring tree where the larvae may be found.

Several other species of clearwing have come my way since I started searching flowers for flies. On 7th June this year I took a specimen of *S. culiciformis* L. which was feeding on flowers of hawthorn on Chobham Common. Last year I found imagines of both *S. myopaeformis* Borkh., and *S. tipuliformis* Clerk at ground elder flowers in my garden.

Other dipterists or hymenopterists must also notice clearwings from time to time, and I would be interested to hear of their records, especially for Surrey. G. A. COLLINS, 15 Hurst Way, Croydon, Surrey.

SCOPARIA AMBIGUALIS (TREITS.) (LEPIDOPTERA: PYRALIDAE) – LARVA FEEDING ON ROOTSTOCK OF VALERIAN. – The early stages of *Scoparia ambigualis* (Treitschke, 1829) appear to be unknown so the following discovery is of interest. While collecting at Binn Wood Quarry, Glen Farg, Perthshire (O.S.Grid Ref. NO/1613; V.C.88) on 31.v.1986, my attention was attracted to a bank of lush vegetation in which one of the plants of valerian

(*Valeriana officinalis* L.) was wilting slightly. The day was bright and sunny but it had rained heavily in the morning. Closer investigation revealed what I took to be a tortricoid larva feeding on the superficial layers at the base of the stem and the upper part of the rootstock. It had excavated a groove extending about one-third of the way into the plant tissue. There was no apparent silk associated with the feeding and the larva would have become detached if the plant had been pulled up. It ceased feeding a few days later and in due course an imago of *Scoparia ambigualis* emerged on 6.vii.1986. Unfortunately a larval description and details of the cocoon were not recorded. Due to the abundance of this species in a wide range of habitats it probably adopts this mode of feeding on many different species of plant. — K. P. BLAND, 35 Charterhall Road, Edinburgh, EH9 3HS.

DEFENCE REACTION IN THE SMALL TORTOISESHELL — During mid-August 1985, at Barlaston Rough Close Common, I was observing an unidentified species of dragonfly hawking along the banks of a large pond. During the period of observation a number of insect prey were seized, including a wall brown (*Lasiommata megera* L.), which was consumed from a perch on a nearby tree. Shortly afterwards, the dragonfly approached a small tortoiseshell (*Aglais urticae* L.) This butterfly turned and flew directly at the dragonfly, which promptly broke off the "attack". The dragonfly tried twice more to secure the butterfly, meeting the same response each time. J. KORYSZKO, 3 Dudley Place, Meir, Stoke-on-Trent, Staffs.

LARVAL FOODPLANTS OF ALLOPHYES OXYACANTHAE L. (LEP.: NOCTUIDAE) — In the Highlands of Scotland this species is not uncommon, but the foodplants with which the moth is associated in England are largely absent, these being blackthorn, hawthorn and apple (*Rosaceae*), and for the Highlands G. Harper (*Ent. Rec.* **66**:98) notes birch and sallow, but without indication of the extent to which these plants are utilised. On June 13th, 1986, I found numerous *oxyacanthae* larvae on rowan (*Rosaceae*) at Aviemore and Nethy Bridge, Inverness-shire and at Grantown and Dulnain Bridge, Moray, indicating *Sorbus aucuparia* as a major larval pabulum in the region. — B. K. WEST, 36 Briar Road, Bexley, Kent.

DIORYCTRIA SCHUETZEELLA FUCHS (LEP.: PYRALIDAE) IN SUFFOLK — A single specimen of this moth was taken at light at Monks Eleigh, Suffolk, on 7th August 1986. This species was first recorded in England in 1980 (*Ent. Rec.* **94**: 1-3) and as far as I am aware is known only from Orlestone Forest in Kent and Playden in Sussex. — A. WATCHMAN, "Onchan", Black Lane, Monks Eleigh, Suffolk.

An albino cinnabar moth (Lep.: Arctiidae) in Kent. On 2.vi.1986 at Dungeness I obtained an albino *Tyria jacobaeae* L. in perfect condition at m.v. light. I was able to identify it readily as E. A. Cockayne (*Ent. Rec.* **63**: 263) described as ab. *albescens* ab. nov. a male, *loc. incog.*, taken in 1895 with the normally dark areas, including fringes and abdomen, 'pale silvery grey' adding 'This is a beautiful albino'. I have seen this type specimen in the National Collection, together with a female from Woodchester, Glos., bred 1920. Curiously in this collection are two more labelled *albescens* in which the silvery grey is slightly less silvery and lacks the peculiar luminescence under strip lighting which is to be observed in the other two specimens; it would be interesting to know the genetic significance of this difference, assuming it is not due to the effects of killing agents, or other treatment. — B. K. West, 36 Briar Road, Bexley, Kent.

Odinia maculata Mg. (Dipt.) at Windsor; with a note on two other species in S. E. London. — *Odinia maculata* Mg. appears so far to be very rare in Britain (early records are doubtless mostly referable to *O. meijerei* Coll.). In 1952 (*Proc.R.ent.Soc. Lond.*(B), **21**:100-116) Collin separated out the true *O. maculata* and brought our two previously listed species up to four. The sole British examples of the last-named that he had seen were a pair taken by himself on a *Cossus* oak in the New Forest (1939) and one in the BMNH from Guestling, E. Sussex (1905); he remarks that the species is "obviously associated in some way with oak trees". It is fairly clear that, with one exception, these uncommon flies are connected with the sappy borings of wood- or bark-feeding beetles, and have more or less specific associations; and that, in the light of what we now know, *O. maculata* sensu Colyer & Hammond (1951, *Flies Brit.Isl.*: 239) should be *O. boletina* Zett. The true *maculata* may well have been found again, but I have seen no further record.

On 27th June, 1985, I caught a fly of this genus amongst the borings of the Buprestid beetle *Agrilus pannonicus* Pill. & Mitt. (=*biguttatus* F.) on the trunk of a large oak in Windsor Great Park heavily infested on one side by this insect. The exit holes were very numerous where the fly occurred but no other specimen could be seen. Though guessed at the time as probably *O. maculata*, its identity has only lately been confirmed; it presents all the characters given by Collin (*l.c.*) for that species. The latter bears a strong resemblance to *O. meijerei*, which during the early 1970s was not scarce on sapping elms attacked by *Scolytus* beetles (its usual habitat) in this district — Blackheath, Greenwich, and Charlton; I have heard that this was also the case in various other localities. Besides this, in my home area I have found only *O. boletina*, and that but once — on a fallen poplar, where it may have bred out of

boleti in the base of the stump. Elsewhere I have met with it in Windsor Forest on fungi of this type on beech, always on the 'gills' of the fruiting bodies. Mr. P. J. Chandler has taken a third species, *O. hendeli* Coll., in S. London (Bromley). Mr. B. H. Cogan (1968, *Ent. mon. Mag.* **104**: 252-4) has added two further species of *Odinia* to our list, whilst it is quite likely (as Collin has pointed out) that we possess also *O. ornata* Zett. Evidently, therefore, a close watch should be kept for these interesting and attractive little flies, whose facies is very characteristic. – A. A. ALLEN.

IS SCROBIPALPA COSTELLA (H. & W.) (LEPIDOPTERA: GELECHIIDAE) DOUBLE BROODED? – Emmet's Guide to the Smaller British Lepidoptera (1979) describes *Scrobipalpa costella* (Humphrey & Westwood, 1845) as single brooded with larvae occurring in August and September which give rise to imagines in September that overwinter until June. This species is not common in South-east Scotland due to the scarcity of its food-plant but one example reared this year appears to have adopted a different strategy. A single larva was found feeding in the lightly spun terminal shoot of woody nightshade, *Solanum dulcamara*, at Seton Bents, Longniddry, East Lothian (O.S.Grid Ref. NT/4376; V.C.82) on 18.v.1986. The plant was an isolated one growing in the shade of a thicket of sea buckthorn. Subsequently a fine large specimen of *S. costella* emerged 28.vi.1986. This example would indicate that, even in a late year like 1986, this species can be double brooded. – K. P. BLAND, 35 Charterhall Road, Edinburgh, EH9 3HS.

SYNCHITA SEPARANDA REITTER – A THIRD BRITISH LOCALITY – One May evening, when examining a small sycamore log in my garden in Peckham, South-East London, I discovered several specimens of what I took to be *Synchita humeralis* Fabricius. The evening was hot and humid and the beetles were active, running over the wood and crawling under the thin bark where it was loose. Considering it unusual to find any beetle on sycamore, I referred to Mr. A. A. Allens paper on *Synchita* (*Entomologist's Mon. Mag.* 1964, **100**: 36-42). There was however, no mention of sycamore, but on closer examination it became apparent that my specimens were not *S. humeralis*, but *S. separanda*. Comparison with a specimen of *S. humeralis* (bred from *Daldinia concentrica* by Mr.P. Sokoloff) and dissection of the aedeagus confirmed this identification.

Mr. Allen gives two localities for *S. separanda* – Windsor Forest and Knole Park, Sevenoaks, hence my Peckham garden (coincidentally almost half way between Windsor and Knole) is the third recorded British locality.

The association with sycamore seems odd at first, but a general association with fungus is apparent from Mr. Allen's list of records. The log in question had been cut from a 50-foot sycamore tree in

September 1985, and had become infected with a dark brown smut-like fungus under the thin bark. In this powdery pabulum the beetles were very common (more than 50 individuals in a log 3 feet 6 inches long and 6 inches in diameter) along with several hundred specimens of *Enicmus brevicornis*.

Subsequently, both Mr. Allen and Professor J. A. Owen have informed me that when collecting in Windsor Forest, they found *S. separanda* under sycamore bark in company with the newly discovered *Cicones undatus*.

Sycamore was first introduced into Britain from the Continent some time in the 15th century, but it has not become a common tree until recently. Even now, it is associated with hedges, plantations and gardens, and although it is widespread and grows vigorously from seed, it cannot be considered as a major constituent of British woodland. Assuming there to be some relationship between the frequencies of plant-feeders and their specific food-plants, it is perhaps only now that sycamore-specific (or sycamore fungus-specific) insects can increase their ranges. (Alternatively, insects which feed on other plants but which *can* eat sycamore, may only now find enough sycamore to spread to.) *Enicmus brevicornis* is a case in point. Described as rare by all authorities until about 40 years ago, it is now extremely common on sycamore in gardens, hedges and woods. Future examination of sycamore may prove other species to be on the increase. RICHARD A. JONES, Garden Flat, 131 Chadwick Road, Peckham, London SE15 4PY.

LATE EMERGENCE OF EREBIA EPIPHRON (KNOCH) IN 1986 – Almost certainly due to the generally cool weather conditions experienced for the greater part of the summer of 1986, the emergence of most butterflies in the west of Scotland was exceptionally protracted. The small mountain ringlet was particularly delayed, with fresh specimens being seen on the wing just below the 2769' summit of Beinn nan Imirean, near Crianlarich, as late as 9th August. J. MITCHELL, 22 Muirpark Way, Drymen, by Glasgow, G63 0DX.

XANTHOGRAMMA PEDISSEQUUM (HARRIS) (DIP.: SYRPHIDAE), BRED FROM A LASIUS NIGER (L.) (HYM.: FORMICIDAE) NEST. – On 10.iv.1986 a fully grown larva of *X. pedissequum* was found in a gallery of a *L. niger* nest under a stone in an old limestone quarry adjacent to Old Sulehay Forest, Northamptonshire, TL 05-98-. This larva pupated a few days later and the adult emerged on 8.v.1986. Also in the nest were a number of root aphids, upon which the hoverfly larva may have fed. These were identified as *Forda formicaria* von Heyden by Dr. R. L. Blackman of British Museum (Natural History). It is of interest that Dixon (1960, *Trans R. ent. Soc. Lond.* **112**: 354) also records *X. pedissequum* from a *L. niger* nest, but

in this instance the aphids in the nest were of a *Trama* sp. A. P. FOSTER, c/o Nature Conservancy Council, Northminster House, Peterborough, PW1 1UA.

EILEMA CANIOLA HUBN. (HOARY FOOTMAN) IN SW IRELAND – On 17th August 1986 at Baltimore Bay near Skibbereen, SW Ireland, a single *caniola* was attracted to m.v. light. According to Skinner *Colour Identification Guide to Moths of the British Isles* the only previous Irish record this century is by de Worms near Waterford in 1954. Other interesting species seen were: *Euxoa obelisca* D. & S., *Agrotis trux* Hb., *Standfussiana lucernea* L., *Abrostola trigemina* Werneb., *Plusia festucae* L., *Eilema complana* L., *Selidosema brunnearia* Vill. and *Stilba anomala* Haw.

A week earlier (10th August) amongst rocky ground near Kilaboy, Co. Claire, 120 species of macrolepidoptera were recorded at m.v., the best being 3 *Acronicta euphorbia* ssp. *Myricae* Guen., 1 *Calamia tridens* ssp. *occidentalis* Cock., 8 *S. lucernea,* 2 *A. trigemina*, 4 *Autographa bractea* D. & S., 3 *Setina irrorella* L., 60 *Lithosia quadra* L., 4 *Coenotephria salicata* ssp. *latentaria* Curt., 3 *Perizoma bifaciata* Haw., 2 *Catarhoe cuculata* Hufn., 6 *Gnophos obfiscatus* D. & S. and 10 *Aspitates gilvaria burrenensis* Cock. DAVID BROWN, Jacksons Drive, 25 Charlcote, nr. Warwick.

THE VOLTINISM OF CNEPHASIA CONSPERSANA DOUGL. (LEPIDOPTERA: TORTRICIDAE) IN THE INNER HEBRIDES. – *Cnephasia conspersana*, Douglas 1846, is a littoral and univoltine species throughout most of Britain but appears to be bivoltine in the Burren in Ireland. Two flight periods also seem to occur on the Isle of Coll in the Inner Hebrides. Imagines have been taken in the second half of July in three different years (i.e. 24.vii. 1982, 19.vii. 1985, 23.vii.1986) and a pupa found in the terminal shoot of *Cerastium fontanum* (common mouse-ear) on 19.vii.1985 emerged on 25.vii.1985. However a pupa found in spun leaves of *Trifolium pratense* (red clover) on 25.vii.1984 delayed its emergence until 17.viii.1984, while well-grown larvae collected on 19.vii.1985 (in seedpod of *Rhinanthus minor* (yellow rattle) and 21.vii.1985 (in the flowerhead of *Hypochoeris* sp.) emerged on 24 and 23.viii. 1985 respectively. Thus on the Isle of Coll a tendency to two flight periods appears to be due to a univoltine species adopting two different emergence strategies. – K. P. BLAND, 35 Charterhall Road, Edinburgh EH9 3HS.

## OBITUARY

### Lionel George Higgins, MA., MD., FRCS., FRCOG., FRES

The death of Dr. Lionel Higgins on 9th October, 1985 at 94, was a very great loss to the worlds of entomology and medicine.

Perhaps best known for his co-authorship with the late N. D. Riley of the unsurpassed *Field Guide to the Butterflies of Britain and Europe* and also the companion volume, of which he was the sole author, on the *Classification of European Butterflies*, Lionel Higgins was also famous for his studies of the Melitaeine butterflies. These excellent monographic works on the Palaearctic *Melitaea, Euphydryas* and *Mellicta*, and the Nearctic *Chlosyne* appeared in the *Transactions of The Royal Entomological Society* between 1940 and 1960, but he wrote numerous other important papers on butterflies some of which appeared in this journal. His energy and enthusiasm in his latter years were unfailing and it was something of a surprise when he once told me that he had not been expected to survive a severe bout of rheumatic fever in his childhood. He was thought too delicate to go to school in fact, and it was during his education at home that his lifelong interest in natural history was awakened.

He recovered enough to endure the rigours of medical school and took his degree at Clare College, Cambridge, completing his clinical studies at St. Thomas's Hospital, London. He joined the Royal Navy in 1916 and served as Surgeon Lieutenant in HMS Royal Oak and HMS Revenge at Scapa flow. On leaving the Navy he resumed his medical career and his progress in this profession was no less outstanding than his achievements as an entomologist. In 1920 Dr. Higgins became a Fellow of the Royal College of Surgeons, and after early membership of The Royal College of Gynaecologists and Obstetricians he was elected a Fellow and became Consultant Gynaecologist and Obstetrician for north west Surrey. In addition he was awarded an MD for his study of anaemia in premature babies.

His greatest enthusiasm however was for the Holarctic butterflies and he travelled widely through Europe, North Africa, the Middle East and North America, usually in company with his wife Nesta, collecting and recording distribution and regional variation. The results of these expeditions were recorded in various entomological journals, and with the publication of *The Field Guide* in 1970 his expertise was recognised world-wide. In 1972 the Zoological Society of London presented him with The Stamford Raffles Award for contributions to Zoology and 1982 he was awarded the H. H. Bloomer Award by the Linnaean Society. The superb entomological library which he built up over the years has been bequeathed to the Ashmolean Museum, Oxford and his extensive collection goes to the British Museum, Natural History.

I first met Lionel Higgins in 1970, but it was only within the last eight years of his long life that I came to know him as a friend and mentor and during that time was a regular visitor to his home at Focklesbrook Farm. With his calm manner and his gentle humour, he had a remarkable facility for quickly putting people at ease, so

that on only brief acquaintance he commanded affection as well as respect. The large gathering which filled St. Lawrence Church, Chobham at his memoral service was a testimony to the love and esteem with which he will always be remembered. C. J. LUCKENS.

# Current Literature

**Katalog over de danske Sommerfugle (Catalogue of the Lepidoptera of Denmark)** by **K. Schnack** (ed.) pp.163 Paperback. Entomologiske Meddelelser Vol. 52 (2-3), Copenhagen 1985. Available from Apollo Books, Lundbyvej 36, DK-5700. Svendborg, Denmark. Price DK.140 (ca. £11).

This book will be of considerable interest to British Lepidopterists as it bilingual, being printed in two columns Danish and English and is much more than a simple catalogue since recent ideas concerning the higher classification of the Lepidoptera and nomenclature are also included. The catalogue part of the work is presented in tabular form for each of 2319 species. The basis of distribution are the 11 Danish "zootopographical districts". It is clear that records have been most rigorously vetted since evidence of at least one voucher specimen was a prequisite for inclusion. The recording of data included the examination of a very large number of private collections so that this catalogue must be considered to be as free from recording error as possible.

The list has been built upon the earlier check-list by Karsholt and Nielsen (1976). Changes in the higher classification from the earlier list are discussed in a chapter by N. Kristensen and of nomenclature in a separate series of numbered notes with an introduction by O. Karsholt (184 ref.). It is these two chapters which are likely to be of the most interest and concern of British Lepidopterists. Amongst major changes in classification is the almost complete reversal of sub-families in the Noctuidae and the inclusion therein of the Nolidae. There are many other major changes and some genera and sub-families have been transfered to other taxa mostly on the basis of very recent research by Minet, Nielsen, Robinson and Kyrki. Changes in the nomenclature are no less sweeping with such familiar names as *Hoplodrina alsines* being relegated to the status of junior synonym and the acceptance of the paper by Sommerer that *Ectropis crepuscularia* and *E. bistortata* are conspecific.

In conclusion to the chapter on nomenclature Karsholt maintains that: "-a stability in the names of North European Lepidoptera is within reach. On the other hand I do believe that future systematic research on Lepidoptera will lead to considerable changes in generic names for a long time to come." This is a most scholarly and careful national catalogue and should become a model for future systematic lists. – P. J. JEWESS.

# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

*(Founded by J. W. TUTT on 15th April 1890)*

## CONTENTS



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# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

*Edited by*
P. A. SOKOLOFF, M. Sc., C.Biol., M. I. Biol., F.R.E.S.

*with the assistance of*





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HELL COPPICE/BERNWOOD FOREST – We are preparing a history of the butterflies of this area which includes Hell Coppice, Shabbington Wood, Oakley Wood and Yorks Wood in Buckinghamshire, and Waterperry Wood in Oxfordshire. We would be grateful for records of all species of butterflies – even the common ones – and would welcome information on the whereabouts of collections containing specimens from the area. Dr. D. F. OWEN and Dr. T. G. SHREEVE, 2 Shelford Place, Headington, Oxford OX3 7NW.

FOR SALE – Interesting, varied, worldwide collection of butterflies, moths and insects, made during early part of century, displayed in three glass-fronted, mahogany-faced deal cabinets, twelve draws each. £1200. A. BAYNES 09323 47853

HELP WANTED – I am compiling an up-to-date list of the Macrolepidoptera occuring in West Sussex. Any record covering the past three years would be welcome (including singletons). SEAN ODELL, 43 North Street, Worthing, West Sussex BN11 1DU

HELP WANTED – With regard to two projects in which I am presently involved I would be grateful for any records of Pug Moths (*Eupithecia, Chloroclystis* and *Gymnoscellis* spp) held by readers. Gaston Prior and myself are doing a county-by-county survey of this group and we are particularly short of records for Wigtown, Selkirk, Roxburgh and Fife, though any records would be most gratefully received. Secondly, a list of the lepidoptera of Shropshire is being compiled and records of all lepidoptera from that county would also be greatly appreciated. The appropriate acknowledgements would, of course, be given . ADRIAN RILEY, Entomology Dept., Rothampstead Experimental Station, Harpenden, Herts.

# ABBOT'S WOOD – A HISTORY OF A WOODLAND AND ITS BUTTERFLIES

By M. PARSONS* and M. HADLEY**

## Introduction

Abbot's Wood is about 6 miles inland from Eastbourne and just north of the South Downs (OS grid. ref. TQ5607). Although considerable changes have occurred within the woodlands boundaries, the site has always been well frequented by entomologists and hence has a well recorded entomological history. At the turn of the century the wood was a hive of activity, as reflected by the number of notes appearing in various journals such as the *Entomologist,* the *Entomologist's Record* and the *Entomologist's Monthly Magazine.* The wood is also mentioned in several local lists, notably Jenner (1883-1886), the *Victoria County History* (1905) & Adkin (1928). Recently however, the wood has not been the mecca it once was, comparatively few entomologists visit the site regularly, and very little published material is available. In 1983 the Nature Conservancy Council commissioned a butterfly survey of the site, the objectives being to note the status and distribution of the species present as well as harmful management practices, and to suggest suitable management proposals which would be beneficial to the woodlands species. An unpublished work by Salvage (Circa 1975) laid the background history of the woodland; this has been supplemented with the Forestry Commission's plans and recent 'compartment' histories, along with information gleaned from various articles. This paper relates the varying fortunes of the butterfly population to changes in land-use management practices.

## The History of the Wood

Abbot's Wood was once part of the vast Saxon forest of Andredesweald which stretched along the south of England from Kent to Hampshire. By the time of Henry I, the woods then known as Lindhersse were given to Battle Abbey and overseen by the Abbot, hence Abbot's Wood. The woods remained part of this estate until dissolution under Henry VIII. There is evidence to suggest that the monks of the Abbey went to considerable trouble to drain their lands and ancient ditches and embankments are still present today.

Many medieval industries seem to have occurred in the wood.

* The Forge, Russells Green, Ninfield, East Sussex.
** 7 Beverington Close, Eastbourne, East Sussex.

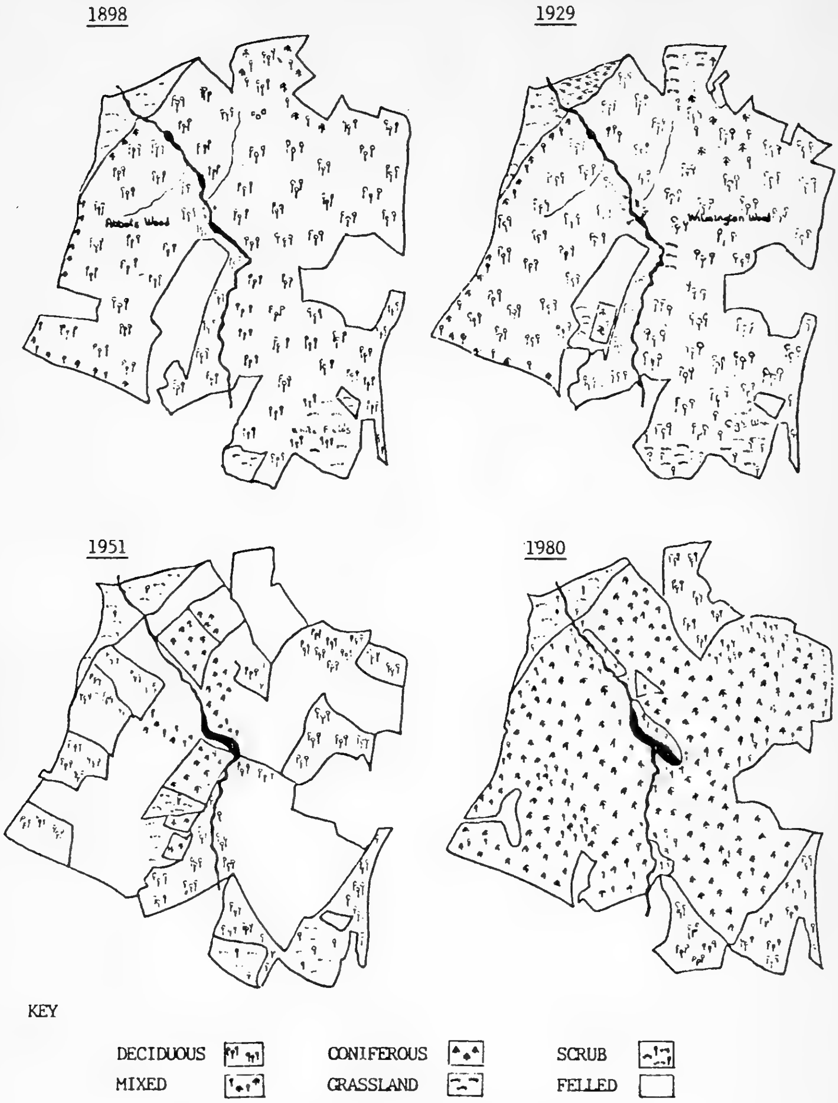


Fig. 1. Woodland changes 1898-1980.

There was an osier plantation until comparatively recent times, this might have provided baskets for a kiln known to have been in the area. There is also evidence of a mill near Robin Post Lane, as well as three fish ponds from which the lake probably originated, therefore the woods would have been the scene of considerable human activity. Farming has carried on around the woodland for sometime, and in 1883 the trees of White Fields were being cut down and cattle let on to the land. The woodlands became the property of the Chatsworth Estate and were leased out for several years. At this pre-war time it was a mixed wood of birch, hornbeam and gigantic oaks and beeches. The rides and paths twisted and turned to create a maze in which it was easy to get completely lost. Many wild flowers grew in profusion, several rare species occurring.

It was also renowned for its game, abundant bird life and of course its entomology, especially the butterflies, moths and beetles.

During World War 2 and for some years after, a dire need for timber and charcoal brought about the beginning of the end for the oaks and beeches. Felling commenced from about 1940. Around 1941 the wood was mainly a wild unkept area of scrub under sparse stag-headed oaks, and there were no walkable rides. The wood was more accessable on the east side with some fine oaks and coppiced sweet chestnuts still remaining. In preparation for 'D-Day' the wood became home for thousands of troops sheltering under the remaining trees. A wide strip was cleared of trees, levelled and prepared as a landing strip. Two large areas of Milton Hide were treated in a similar fashion though never used. In 1944 the first planting of conifers happened when the Chatsworth Estate planted a large open area with spruce, pine and larch. Most of the rest of the woodland was left to become a jungle. In 1949 new clearings were created by the felling of mature timber. The Forestry Commission acquired 880 acres in 1953 and commenced the task of reafforestation in 1954. This was at first with oaks, pines and other conifers, but latterly with just the conifers. In 1956 Milton Hide was burnt back as rabbits were thriving and causing problems to local farmers.

It has taken just thirty years to alter the once predominantly oak woodland to the coniferous forest of today. The vast drifts of primroses, anenomes and bluebells that once covered the area are gone, the number of birds have declined as have the insects. It is interesting to note that Abbot's Wood was declared a Site of Special Interest in 1954 and was removed from the schedule in 1966.

## The Butterflies

HESPERIIDAE: Of the six recorded species in the woodland five may still occur. *Thymelicus lineola* Ochs., (Essex skipper) and *T. sylvestris* Poda., (small skipper) are both locally common, the former has only been recorded since the late 1970's, probably overlooked before this time. *Ochlodes venata* Tur., (large skipper) and *Pyrgus malvae* L., (grizzled skipper) are apparently much scarcer than in former years and appear in low numbers. *Erynnis tages* L., (dingy skipper) may have disappeared and was last seen in 1975. The sixth species, *Hesperia comma* L., (silver-spotted skipper) has not been recorded since Dale (1879) who describes it as 'rare in the wood', not surprisingly as the nearest suitable habitat for this butterfly is several miles away.

PAPILIONIDAE: A single *Iphiclides podalirius* Scop., (scarce swallowtail) was noted in Robin Post Land, Bromley (1893).

PIERIDAE: *Pieris brassicae* L., (large white), *P. rapae* L., (small white) and *P. napi* Steph., (green-veined white) all occur in the woodland, although in earlier times a small form of *P. napi* Steph. apparently occurred, Jenner (1885). *Gonepteryx rhamni* L., (brimstone) flies in fair numbers in selective rides, as does *Anthocharis cardamines* Ver., (orange tip) which frequents more open areas beside the stream. *Leptidea sinapis* L., (wood white) seems to have occurred in the wood until 1878. Pratt (1981) concludes that the species disappeared from East Sussex at around that time. One later record from the Biological Records Centre cites a specimen seen in 1912, a possible vagrant or more likely an introduction. Migrant Pieridae include *Colias croceus* Geo., (clouded yellow) which is often recorded in favourable years, it was noted on the recent survey, Parsons (1983), including a single ab. *helice*. *C. hyale* L., (pale clouded yellow) was regarded as rare, Dale (1897), and has been recorded in the area recently, Pratt (*pers. comm.*). *Pontia daplidice* L., (bath white), although not strictly within the woodland boundary was seen in a lane leading to White Fields (1879). A second was seen at 'Hailsham' by Hillman (Pratt, 1981). *Aporia crataegi* L., (black-veined white) was noted as 'having occurred at Abbot's Wood' VCH (1905). A footnote by Goss, however, states that he had not seen the species since 1868.

LYCAENIDAE: Both *Callophrys rubi* L., (green hairstreak) and *Quercusia quercus* L., (purple hairstreak) still occur in the wood, the latter being more frequent. The only other hairstreak. to have been recorded was *Strymonidia w-album* Knoch (white-letter hairstreak) last seen in 1944 (Biological Records Centre).

*Lycaena phlaeas* Fab., (small copper) is no longer the common insect once mentioned by Dale (1879) nither is *Polyommatus icarus* Rott., (common blue), which is now only locally common. *Celastrina argiolus* Ver., (holly blue) although present, has fluctuated greatly. Adkin (1901) states that it was 'unprecedently common', Parsons (1983) saw but five examples of the species.

The four remaining Lycaenids all seem to be casual visitors to the woodland. *Cupido minimus* Feuss., (small blue), Dale (1879), *Lysandra coridon* Poda, Dale (1879), Davys (1976, *pers. comm.*), and Parsons (1983), *Aricia agestis* D. & S. (brown argus) which appears at irregular intervals, all seem to be strays from nearby downland colonies. Lastly, *Cyaniris semiargus* Rott., (mazarine blue) a single specimen of which was captured by T. C. Hedley in White Fields in 1881 (Dynes, 1883).

NEMEOBIIDAE: *Hemaris lucina* L., (Duke of Burgundy fritillary) was noted as 'very rare' by early recorders, Adkin (1928) cites the

existence of a colony in the Eastbourne area, perhaps a vague reference to the woodland. Recent investigations, Pratt (*pers. comm.*), suggest this colony did not linger past 1945.

NYMPHALIDAE: Early authors regarded *Ladoga camilla* L., (white admiral) as a rarity although by the early twentieth century its fortunes were reversed and it became one of the most common of the woodlands butterflies, today it is only locally common. A species to be seen with certainty, according to Dale (1879), was *Apatura iris* L., (purple emperor), although Adkin (1928) stated that it had not been seen for many years. A singleton seen by Tomlin was noted by Adkin (1932). *Vanessa atalanta* L., (red admiral), *Cynthia cardui* L., (painted lady) and *Aglias urticae* L., (small tortoiseshell) have all been regularly recorded throughout the period, although only one *A. urticae* was noted on the 1983 survey.

*Nymphalis polychloros* L., (large tortoiseshell), once 'common' (1879), seemed to have become absent by the 1930's (Dale), a few individuals were subsequently seen, the last of these by Pepin (1962). *Nymphalis antiopa* L., (Camberwell beauty) is listed on the strength of a single record by Jenner (1885). *Inachis io* L., (peacock) is the most common nymphalid butterfly in the wood at the present time. Although not recorded until 1970 (Davys, *pers. comm.*) *Polygonia c-album* L., (comma) could have appeared in the wood in the 1930's at a time when there was a general resurgence of this species.

As a group, the fritillaries have suffered a serious decline with only three species recently recorded from the woodland, and all at low levels. *Boloria selene* D. and S., (small pearl-bordered fritillary) once a species of great profusion, was 'common', Alderson (1910), 'common in our woodlands', Adkin (1928), and Dyson (*pers. comm.*) mentions it as 'very common in one particular part of the wood in the 1950's. A dramatic decline has taken place however, with only a single specimen seen in 1983 (Parsons). Early workers also regarded *B. euphrosyne* L., (pearl-bordered fritillary) as common, this remained the case until a decline began in the 1960's, with the last record being in 1980 (Pratt, *pers. comm.*). Of the immigrant *Argynnis lathonia* L., (Queen of Spain fritillary) there has been a single reported sighting in White Fields, Dale (1879). Out of three species *A. aglaja* L., (dark green fritillary), *A. paphia* L., (silver washed fritillary) and *A. adippe* Ver., (high brown fritillary) the last mentioned was considered to be the most frequent, VCH (1905). It was soon to be regarded as scarcer than *A. paphia* L., Adkin (1928), and seems to have died out in the woodland in the 1940's or 1950's. *A. aglaja* L. was last seen in 1976, Pratt (*pers. comm.*) and *A. paphia*

was noted once on the survey in 1983 (Parsons). *Eurodryas aurinia* Rott., (marsh fritillary) seems to have been present around about 1892 when it was seen by several entomologists, but has not been seen since. *Mellicta athalia* Rott., (heath fritillary) has been reintroduced into the woodland more than any other butterfly, yet it was almost certainly resident until about 1918. Since that time numbers recorded fluctuated greatly. Mr. Pickett introduced a stock around the time of the Second World War, Dyson (*pers. comm.*). The species flourished briefly until its final demise sometime between 1956 and 1960.

SATYRIDAE: With the exclusion of *Hipparchia semele* L., (grayling) all seven members of this family recorded still occur. The casual records of *H. semele* L., were strays from nearby calcareous environs. *Pararge aegeria* But., (speckled wood) only seems to have been noted since the late ninteenth century, with a period of absence in the 1920's. *Lasiommata megera* L., (wall brown) still occurs, though in smaller numbers than before. A conspicuous satyrid that has declined in numbers is *Melanargia galathea* Ver., (marbled white), this is now confined to the Milton Hide area. *Pyronia tithonus* Ver., (gatekeeper) and *Maniola jurtina* Linn., (meadow brown) are still common, especially the former. *Coenonympha pamphilus* L., (small heath) has been found throughout the recording period restricted to the grassier areas. *Aphantopus hyperantus* L., (ringlet) is still very common in some parts of the woodland.

## Discussion

As can be seen from Table I, 51 species have been noted, a remarkable total. However, immigrant and casual species account for 14 of these, leaving 37 species which have at some time or another bred in the woodland. At the time of writing 28 species may be breeding in the woodland, 4 of these are very scarce. The elm feeding *S. w-album* disappeared around the time of the Second World War. No elm occurs within the woodland today and it seems likely that any that did were cut down during clearance around this time. *N. polychloros* probably died out from the wood around the turn of the century coinciding with its general decline in the county, any subsequent sightings probably represent migrants. The reasons behind the lost of *Apatura iris* are less clear, although habitat loss in White Fields during the late 1880's, would have had serious implications as the wood was the stronghold for the butterfly.

In the 1940's and '50's about thirty species could be recorded within the boundary of the wood, some species of fritillary were

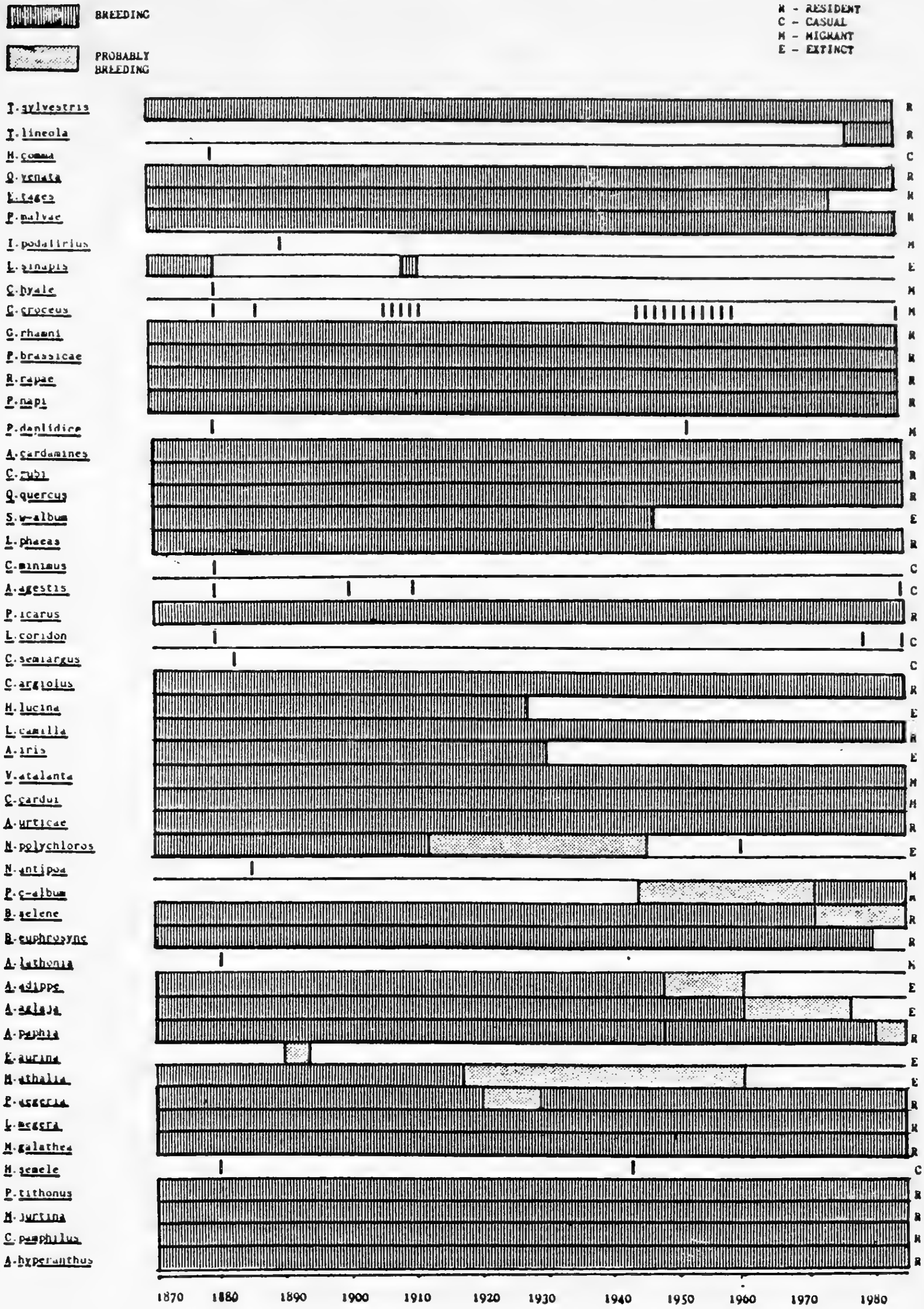


Table 1. Historical occurrence of Species in Abbot's Wood 1870-1984.

common, notably *B. selene* and *B. euphrosyne*, this seemingly coincided with clear-felling at this time. These activities would have created a large area of suitable habitat resulting in a population explosion. However, as the clear-felled areas were replanted with conifers and the crop began to mature, shade would have increased and the available habitat would have shrunk, this coupled to the lack of suitable glades would explain the serious decline in the fritillaries.

*A. adippe* was the first to die out, soon followed by the final demise of *M. athalia,* after several successful re-introductions, *A. aglaja* lingered on until the mid 1970's. *B. selene* and *B. euphrosyne* underwent declines, although they may well still survive in the woodland. The decline of *A. paphia* was probably linked to the clearance of the large oaks required by the females for successful oviposition – there are few left standing today. As the conifers grew up, the ride edges would also have become more shaded rendering them unsuitable for *P. malvae* and *E. tages.* Because the initial replanting took place at the same time throughout the woodland, there would have been few suitable places where the diversity of the woodlands butterflies could have been maintained. There are few rides and glades and those that remain are not wide enough or do not have developed edges to support the species previously present.

As a result of the survey in 1983, a management plan was produced in liaison with a local Forestry Commission official. Taking into account financial constraints it is hoped that three areas are to revert, with management, to coppice with standards. These will be linked by widening specific rides and the opening up of ride intersections to form useful glades. It remains to be seen whether these recommendations will be fully implemented, although it should be possible to balance commercial timber production whilst enhancing the populations of butterflies.

## Acknowledgements

Our thanks are due to the many people who have helped us with information for this paper, our special thanks are due to the Nature Conservancy Council for financial assistance with the woodland survey. In particular we would like to mention C. Robinson, W. Rimington, A. Bowley, D. Harvey, C. Pratt, P. Davys, R. Dyson and C. Smith. Particular thanks are due to the Biological Records Centre.

## References

Adkin, R. (1901) Abundance of *Lycaena argiolus* near Eastbourne. *Entomologist* **34**: 16, 17.

——— (1920) Random recollections of the season of 1919 at Eastbourne. *Entomologist* **53**: 78-90.

——— (1928) The butterflies of Eastbourne. *Trans. Eastbourne Nat. Hist. Soc.*

——— (1932) Additions to the lepidopterous fauna of the County of Sussex since the publication of the *Victoria County History List* (1905). *Entomologist* **65**: 28-33.

Alderson, J. (1911) Lepidoptera in Sussex. *Entomologist's Rec. J. Var.* **22**: 190-191.

Battley, A. U. (1892) New Forest, Epping, Abbot's Wood, Chingford etc. *Entomologist's Rec. J. Var.* **3**: 161.

Blenkarn S. A. (1901) Notes from Eastbourne. *Entomologist* **34**: 25-26.

Bromley, F. (1893) Butterflies of the Eastbourne district. *Entomologist* **26**: 19.

Carr, F. M. B. (1899) Collecting at Hailsham, Sussex and Eastbourne. *Entomologist* **32**: 276-278.

Chartres, S. C. N. (1946) *Nymphalis polychloros* at Abbot's Wood. *Entomologist* **79**: 222.

Colthrop, C. W. (1918) Some field notes for 1916-17. *Entomologist's Rec. J. Var.* **30**: 50-54.

Coulson, F. J. (1910) The Lepidoptera of Ruffet's Wood and neighbourhood 1909-10. *Entomologist's Rec. J. Var.* **22**: 248.

Crisp, E. (1920) *Melitaea athalia* in Kent and Sussex. *Entomologist* **53**:18.

Dale, W. C. (1879) Insect hunting in Abbot's Wood. *Entomologist* **12**: 152-157.

Esam, N. W. (1893) Abbot's Wood. *Entomologist's Rec. J. Var.* **4**: 153.

Frowhawk, F. W. (1934) *British Butterflies.* Ward Lock.

Gross, H., Fletcher W. H. B., (1905) V.C.H. **1**: 164-190.

Harding, W. G. (1918) Butterflies in Abbot's Wood. *Entomologist* **51**: 186.

Hawes, F. W. (1885) Notes from Abbot's Wood. *Entomologist* **18**: 265.

James, R. E. (1908) Lepidopterological notes from the Hailsham district – the Aurora Borealis and Treacle. *Entomologist's Rec. J. Var.* **20**: 227.

Jenner, J. H. A. (1873) Lepidoptera observed in Sussex during 1872. *Entomologist* **9**:249.

—————— (1885-86) Macrolepidoptera of East Sussex. *Trans. Eastbourne Nat. Hist. Soc.*

Levett, R. J. R. (1948) Butterfly collecting in Balcombe and East Sussex. *Entomologist's Rec. J. Var.* **60**: 95-97.

Marcon, Rev. J. N., (1955) The hazards of the chase. *Entomologist's Rec. J. Var.* **88**: 213.

Meaden, L. (1913) *Colias edusa* at Hailsham and Brighton. *Entomologist's Rec. J. Var.* **25**: 183.

Parsons, M. S. (1984) *A butterfly survey of Abbot's Wood.* Report by the Nature Conservancy Council.

Pratt, C. (1981) *A History of the butterflies of Sussex.* Booth Museum, Brighton.

Porritt, G. T. (1876) Capture of Lepidoptera in East Sussex. *Entomologist's Mon. Mag.* **13**:37-38.

Robbins, R. W. (1892) Notes on collecting. *Entomologist's Rec. J. Var.* **3**: 232.

Russell, A. (1912) Seasonal notes for 1912. *Entomologist's Rec. J. Var.* **25**: 248-9.

Salvage, S. (1975) Unpublished diaries.

Sich, A. (1912) *Euchloe cardamines* ovipositing on *Capsella bursa-pasturis. Entomologist's Rec. J. Var.* **24**: 221.

Southerby, R. M. (1883) Lepidoptera of Eastbourne. *Entomologist* **16**:22-23.

Thornewill, Rev. C. F. (1883) Lepidoptera of Abbot's Wood. *Entomologist* **16**:35.

Tugwell, W. H. (1892) The Lepidoptera of East Sussex in Early June. *Entomologist* **25**: 156.

Whinstone, J. P. (1883) Abbot's Wood in July. *Entomologist* **16**: 183-4.

Worsley Wood, H. (121) *Brenthis argynnis selene,* second brood at Abbot's Wood *Entomologist* **54**: 17.

EILEMA CANIOLA HUBN. (THE HOARY FOOTMAN) IN KENT – On the night of 23rd/24th August 1984 a specimen of *E. caniola* was captured in an actinic trap at Greatstone, Kent. According to Chalmers-Hunt (*The Butterflies and Moths of Kent* **3**: 235) this represents the fifth confirmed record of this species for Kent this century. Although a number of *Autographa gamma* L. were taken on the same night, there were no other notable immigrants seen. My thanks are due to Bernard Skinner for confirming the identity of this moth. A. P. CLANCY, Delhi Cottage, Dungeness, Kent, TN29 9NE.

COPRIS LUNARIS L. (COL.: SCARABAEIDAE) ON GUERNSEY – At about 12.05 a.m. on the night of June 14th/15th 1986 a male specimen of this rare dung beetle flew to my m.v. trap at Two Wells Barn, in the Vale district of Guernsey. According to notes very kindly provided by Mr. L. Jessop of the British Museum (Natural History) this species has not been on mainland Britain since 1955, but is said to be widespread in France. I cannot find any previous reference to this species on Guernsey. My trap was sited in agricultural land, and there were tethered cattle in close proximity. *C. lunaris* excavates deep brood tunnels beneath cow or horse dung. The light, sandy soils of Vale especially on the nearby L'Ancresse Common could, I am sure, be searched profitably for the surface "spoil heaps" that indicate the underground activities of this interesting beetle. – M. D. BRYAN, Keeper of Natural History, Birmingham Museum.

# *ONTHOPHAGUS NUCHICORNIS* L. (COL.: SCARABAEIDAE), A SPECIES MISUNDERSTOOD IN BRITAIN

By A. A. ALLEN, B.Sc., A.R.C.S.*

Though no-one would guess it from the literature – even up to and including Britton (1956:14) – everything points to this dung beetle as being a highly localized species with us, having moreover a special habitat. Personally I have found it at only three localities, all on the south-east coast: Deal and Littlestone (Kent) and Camber (E. Sussex), always on the loose sand of the dunes under or about dog dung – the only kind normally to be seen in such places. Inquiries among fellow coleopterists have elicited the fact that their experience of this *Onthophagus* is remarkably similar, including that of so widely-ranging a collector as the late C. E. Tottenham. Mr. P. J. Hodge, however, has met with it not only at Camber but also in the Suffolk Breck and at Oxwich in the Gower Peninsula of Glamorgan, again always on sand. Mr. Colin Johnson, who worked the dung beetles intensively round about the 1960s, tells me that he never encountered it.

This apparent restriction of the species to coastal dunes in comparatively few areas (the Breck is maritime in character) has never been pointed out in British works, as far as I am aware. Thus, the above facts contrast oddly with Fowler's statement under *O. nuchicornis* (1890:14): "The most widely distributed of all our species[1]; not uncommon in the Midlands and the south. . . London district, not uncommon" and with the long list of localities that follows – considerably more than he had given above for the locally frequent *O. similis* Scriba (then known as *fracticornis* Preyss.).

It might, therefore, be supposed that this is simply one more instance of an insect once rather common becoming very restricted and comparatively rare in recent times. Yet I cannot think that that is the case here. Fowler (*l.c.*) says nothing of the attachment of *nuchicornis* to sand, nor even of its liking for the coast as he had just done for *'fracticornis'* (where it does not seem specially apt). The testimony of some of the older collections – or at least, of the few that I have consulted, now incorporated into the National (British) Collection at the BMNH – is instructive. In this, there are less than half as many exponents of *nuchicornis* as of *similis*. Some have no clearly marked locality; significantly, all the J. A. Power,

[1] This statement, nevertheless, could well be correct if the Scottish records are genuine; the species, like *O. similis*, has since been recorded from Ireland (Joy, 1932).

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G. C. Champion and H. C. Dollman specimens are from Deal, the species' apparent headquarters in the south-east, and they form the great majority; there are older ones from the Manchester district, Chesil Bank, and Bude. A few (Andrews Bequest) are labelled Reading – unlikely as a locality, and perhaps rather denoting the well-known early Plymouth collector of that name.

The above facts scarcely bear out Fowler's estimate of the British status of *O. nuchicornis* in his day. I can only suggest that the discrepancy may result from early confusion between this species and the closely related but much commoner *O. similis*. If so, its source is not far to seek: there seems to have been an idea then current that (of the two species) examples with the fore-body "bronze-green or coppery" (Fowler's words) were *'fracticornis'*, while those in which it was black with little or no metallic reflection could safely be referred to *nuchicornis* (cf.pp.11, 14). But this is illusory, even though there is always a certain (if slight) colour difference. For in fact a small proportion only of *O.similis* have the fore parts noticeably greenish, and that indistinctly (contrast *O. vacca* L. and *O. coenobita* Hbst.); the usual tint is an obscure nigro-aeneous, or in the words of Stephens (1839:156) "dusky-brassy". Typical *similis* may thus, it seems to me, have been passing quite widely as *nuchicornis* among Fowler's correspondents, on whom he relied for localities. That he himself was not entirely free of the error is seen from his key on p.11, which separates these species as above, and so is misleading – notwithstanding that his descriptions on p.14 correctly give the structural differences. Later authors (Joy, Britton) avoid the error, but the resulting misconception as to relative frequency and habitat has remained more or less to this day, in that no distinction in these respects is made between the two species.

In passing it can be said that to anyone familiar with *O. similis, O. nuchicornis* seen for the first time at once strikes the eye as somehow different – no doubt owing to elytral pattern as well as the colour-tone of the fore-body. Curiously, both Stephens and Fowler make it slightly the smaller of the two on average, but it appears rather that the reverse is the case.

## References

Britton, E. B., 1956. *Handbooks for the identification of British insects,* **5** (11) (Coleoptera: Scarabaeoidea). London.

Fowler, W. W., 1890. *The Coleoptera of the British Islands*, **4**. London.

Joy, N. H., 1932. *A practical handbook of British beetles,* **1**. London.

Stephens, J. F., 1839. *A manual of British Coleoptera, or beetles.* London.

# THE LARVA OF *PLUSIA PUTNAMI GRACILIS* LEMPKE (LEP.: NOCTUIDAE)

By J. FENN*

After two abortive attempts at rearing this species and several hours spent searching in vain for the larva locally where the moth appears annually in small numbers, I learned that 30 had been noted at Lopham Fen during one night in 1985. I decided that with such a density the fen would be crawling with larvae and accordingly, in the company of Mike Hall from nearby Scole, ventured onto the fen on the evening of 24th May 1986.

After an hour searching the ride edges the only larvae noted were hordes of *Philudoria potatoria, Mythimna* species *straminea* and *pudorina* together with a few *impura.* Nothing remotely resembling a *Plusia.* Despondency began to set in. In desperation I decided to resort to a sweep net and almost unbelievably after the very first sweep a white-striped green larva lay curled in a ring in the bottom of the net. Closer scrutiny revealed only two pairs of prolegs — a *Plusia*! A further nine larvae were obtained over the next hour and it became apparent that they only appeared after areas containing abundant growths of a species of *Calamagrostis* were swept.

The following evening was extremely cool with a heavy dew and only 4 larvae were swept after two hours, including two almost fully grown. All the others had been in the penultimate instar, or smaller. We did, however, find one larva awaiting the final moult, halfway up a *Calamagrostis* stem; so conspicuous was it that we both spotted it simultaneously. Nine more larvae were swept on 6th June and I was delighted to find one in the act of feeding high up on a *Calamagrostis* blade.

The larva is grass green, tinged with yellowish between the segments and becoming noticably darker above the spiracular stripe. The narrow dorsal line is darker green bordered with white from the rear of the thoracic to the beginning of the anal plate. The subdorsals are scarcely darker than the ground colour and also borded with white, the lower line being the more conspicuous, and continuing through the thoracic plate to the end of the anal claspers. The upper white border-line is frequently incomplete.

The white spiracular stripe sometimes appears yellowish, but under high magnification (x30) is seen to be clear white tinged with green along the edges. Spiracles show up even whiter than the stripe containing them; a row of about twelve tiny black-emitting warts just above the spiracular stripe and more setae scattered spar-

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sely over the dorsal surface; there are more hair-bearing black warts on the wrinkled ventral surface.

Thoracic and anal plates are also green; head green, tinged slightly yellowish with, apart from the ocelli, a few tiny black warts and setae. True legs translucent green, brown tipped. Like *festucae* the larva is more elongate and smoother on the dorsal surface than other *Plusia* larva, tapering slightly fore and aft from the seventh segment. Length up to 37mm.

Judging by the description of the larva of *Plusia festucae* in Volume 10 of *Moths and Butterflies of Great Britain and Ireland,* the only differences seem to be the length of the fully grown larva (43mm in *festucae*) and the colour of the spiracles – pink in *festucae*, white in *gracilis*.

The cocoon is slightly off-white and elongate, somewhat resembling that of a burnet and usually spun on the underside of a grass blade.

The pupa is semi-gloss black with varying amounts of pale green on ventral surface. Where reduced to a minimum the green is confined to the apical areas of the wing sheaths and small patches on the first two abdominal segments. One pupa however, was predominately pale green with the black confined to a narrow strip along the dorsal surface.

Of eighteen larvae retained, nine produced adults between 20th June and 1st July, thereby confirming their identity. In captivity the larvae were not choosy feeders. Although provided with a constant supply of *Calamagrostis*, which seemed to be *C. canescens*, being much more slender than the common *C. epigejois*, they also ate *Dactylis, Bromus, Avena* and a tall *Poa* species. This may, of course, have contributed to the 50% failure rate!

HIPPARCHIA SEMELE L. (GRAYLING BUTTERFLY) IN PERTHSHIRE. – According to Thompson (1980) *Butterflies of Scotland* p. 189 this species is extinct in Perthshire. It was with considerable surprise, therefore, that I discovered three specimens (two males and a female) whilst exploring the Braes of the Carse region to the east of Perth on July 18th, 1986. The specimens were flying along a grassy bank by a lane in what appeared, at first sight, to be an unlikely habitat for *semele*. I contacted Mr. M. Taylor of Perth Museum who in turn kindly contacted Mr. Thompson on my behalf about the record. Since the publication of his excellent book, Mr.Thompson has rediscovered *semele* in its' old locality of Kinnoull Hill which also lies to the east of Perth. I would ask any readers who may have found this species in Perthshire to forward their records to Mr. Taylor along with any other records they might consider of interest. M. D. BRYAN, Keeper of Natural History, Birmingham Museum.

# *HELIOTHIS PELTIGERA* (LEP.: NOCTUIDAE) – THE BORDERED STRAW IN DORSET

By MARGARET BROOKS*

For the last few years, my colleague Stuart Roberts and I have been conducting a survey of the moths of Holt Heath National Nature Reserve, in Dorset. On the evening of July 12th 1986 we were crossing an area of wet heath on the reserve at dusk when Stuart disturbed a moth feeding at bell heather flowers. He captured it, and on examination it proved to be a female *Heliothis peltigera* (bordered straw), in good condition.

The only species of groundsel growing in that vicinity was heath groundsel (*Senecio sylvaticus*), so the following day the moth was placed in a container with some of the heath groundsel. On July 14th she commenced laying, placing the eggs either singly or in pairs, tucked among the buds or on the undersides of the leaves. Eggs were laid over a period of 3 days, and larvae began emerging five days after the eggs were laid.

In view of the difficulties associated with breeding *H. peltigera* in this country, it was decided to maintain most of the larvae in a high temperature. As a control, 12 larvae were kept indoors at temperatures of 18-20°C. The remaining larvae – 18 in number – were kept in a south-west facing conservatory during the day, in a temperature of 24-27°C, and in the kitchen at night, at 21°C. During the first and second instars the larvae fed on the flowers of the groundsel, but subsequently attacked the leaves, demolishing them at a most alarming rate. By August 11th, several of the larvae in the conservatory were in their final instar, and 3 colour forms were present – ground colour light green, ground colour dark green, and ground colour light green with pink dorsal patches. On August 15th one began to wander, and was provided with sterile potting compost as a pupating medium – this was accepted, and the larva disappeared below the surface. At this time the larvae being kept at room temperature were only half grown, and several had died exhibiting symptoms of virus disease. In time all of them perished, while only 5 of the larvae kept at higher temperatures were lost. The pupae were kept at the same high temperatures, and the first moth emerged on September 11th, followed the next day by another. A total of 9 moths emerged – one pupa developed white mould, and 3 died when their contents liguified.

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Early in the week commencing July 20th, a first instar larva escaped from its container and wandered on to some cross-leaved heath (*Erica tetralix*) flowers which were close by, by, having been gathered for the purpose of feeding larvae of another species. It began feeding on the flowers, and was kept indoors in the same room as our 'control' batch. Its growth rate compared very favourably with that of the larvae in the conservatory, and it buried for pupation on August 19th. It was of the light green with pink patches form, and had fed exclusively on the flowers of cross-leaved heath at room temperatures, i.e. 18-20°C. A healthy pupa was produced, and the moth – a perfect female – emerged on September 25th.

Is cross-leaved heath a new pabulum for *H. peltigera* in the U.K.? The flowers would seem to be a healthy diet, as the frass produced is quite dry, in contrast to the very wet frass produced by a diet of heath groundsel leaves.

## References

Heath et al. *Moths and Butterflies of Great Britain and Ireland.* **10**.

Pratt. C. The fate of *H. peltigera* D. & S. in Sussex. *Entomologist's Rec. J. Var.* **93**. 137-141.

Allen, P. B. M. *Larval Foodplants.*

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RHAMPHOMYIA BARBATA MCQ. (DIPT.: EMPIDIDAE) AND CANTHARIS FIGURATA MANN. (COL.) IN S.E. LONDON. – On 8th June last, on some marshy ground just east of Shooters Hill, I caught a male of the above very local and usually rare fly by sweeping rank herbage of various kinds in a willow spinney. Though some time was spent at the place, no other was seen. The species is tolerably distinctive in the net by its grey thorax and reddish abdomen, and is remarkable in the male sex from its peculiar hind-leg characters. The records of *R. barbata* appear to be scattered and not numerous; for N. W. Kent, Collin (1961, *Brit. Flies* **6**(2): 372) gives Dartford (Yerbury) and Thames Marshes (H. W. Andrews).

At the same time and place I swept two males and a female of the soldier-beetle *Cantharis figurata* Mann., all within a very limited area. This is not a common species, as Fowler remarks in the VCH list for Kent (1909:155) in recording it from Chattenden and Snodland – both places much farther east in the county. I have always found it very local and somewhat scarce; like the previous insect, it is probably new to the London Suburbs. – A. A. ALLEN.

# *LOMOGRAPHA CARARIA* (HUBN. (LEP.: GEOMETRIDAE) ON JERSEY – A NEW SPECIES TO THE CHANNEL ISLANDS AND THE BRITISH ISLES

By ADRIAN M. RILEY*

An individual of this species was caught in the Rothamsted Insect Survey light trap on Jersey (Site No. 146) during the period 1-3-viii-1981 and was identified from the colour figure in Spuler (1910). The specimen has since been given to the British Museum (Natural History) who have confirmed its identity.

*Cararia* is not known to be migratory and there were no known migrant species caught in the Jersey trap around this time. Seitz (1912), Culot (1919) and Forster and Wohlfahrt (1981) state that the species is both local and scarce so it is possible that its European distribution is far greater than presently assumed. The larval foodplant, poplar, is common in the vicinity of the Jersey trap and the possibility of *cararia* being resident on the island should be thoroughly investigated. This species is rarely mentioned in continental literature but the following notes give a brief account of its known biology.

The distribution abroad includes S.E. Europe and Asia. It is found to an altitude of 600m, inhabiting damp areas adjacent to rivers and streams (Seitz 1912 and Forster and Wohlfahrt 1981). It can also be found along avenues of poplars (Koch 1976). The flight time is usually early June to mid-August, though in the extreme southeast of its range it flies from early April to August in two overlapping generations (Forster and Wohlfahrt 1981).

The egg is reddish brown and oval (Forster and Wohlfahrt 1981). The larva is described as ventrally light green, dorsally light yellowish green with darker dorsal chevrons and a dark violet dorsal stripe. The head is dark brown. It feeds from July to September on poplar (Forster and Wohfahrt 1981) and possibly oak and lime (Koch 1976). It pupates either in a loose cocoon on the ground or in a rolled or folded leaf (Forster and Wohlfahrt 1981).

The pupa is short and thick, dorsally reddish brown, paler ventrally. Wing cases green. The species overwinters in this stage.

Good colour illustrations of the adult are given in Spuler (1910) and Koch (1976).

## Acknowledgements

Thanks are extended to Mr. G. Thomas for operating the Jersey light trap, Mr. R. Long of the Societe Jersiaise and Mr. B. Skinner

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for their help and advice, and Mr. D. S. Fletcher of the British Museum (Nat. Hist.) for confirming the identify of the specimen.

## References

Forster and Wohlfahrt (1981) *Die Schmetterlinge Mitteleuropas.* **5**, Geometridae, p. 202.

Koch, M. (1976) *Wir Bestimmen Schmetterlinge.* **4**, Geometridae, p. 192-193 & pl. 12, fig. 285.

Seitz, A. (1912) *Macrolepidoptera of the World.* **4**, p. 36.

Spuler, A. (1910) *Die Schmetterlinge Europas.* **3**, pl. 59, fig. 5.

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NOTES ON THE RED UNDERWING, CATOCALA NUPTA L. (LEP.: NOCTUIDAE) — On 18th September 1984 I captured a female *nupta* in my garden m.v. trap. Following advice from Bernard Skinner, the moth was confined to a netting-covered container with a pad of sugar-soaked paper for food. The next morning, several eggs had been laid through the netting. A few more eggs were added each night until around 50 had been laid, at which time the moth expired.

The eggs, still attached to the netting and contained in a small plastic box, were overwintered in an outside car-port. In spring they were lightly sprayed and transferred to a refrigerator until the leaves on the local black poplars (*Populus nigra* L.) were about to open. The first larva hatched in late April, with a second ten days later (when the first was about one inch long) and a third after a further two weeks. The first larva formed a loose cocoon in soil during the first week in June, followed by the other two a week later. All the moths emerged between the 8th and 9th July. (No doubt indoor rearing caused these early emergences).

The interesting observation is that although there were four weeks between the first and last hatchings, the larvae pupated within two weeks of each other, and emerged within two days! R. F. McCORMICK, FRES 125 Brocks Drive, North Cheam, Surrey.

PINION-SPOTTED PUG (EUPITHECIA INSIGNIATA HUBN.) (LEP.: GEOMETRIDAE IN SUFFOLK. — A single male of this species was caught in the Rothamsted Insect Survey light trap at Broom's Barn Experimental Station near Bury St. Edmunds (Site No. 88, O.S. Grid Ref. TL 752 656) on the night of 4/5-vi-1985. So far as I am aware this species has not previously been recorded in Suffolk. Thanks are extended to A. Thornhill for operating the trap at Broom's Barn. ADRIAN M. RILEY, Dept. Entomology, Rothamsted Experimental Station, Harpenden, Herts. AL5 2JQ.

# DO COPPER UNDERWINGS (*AMPHIPYRA* SPP.) CRAWL AWAY IN ORDER TO DIE IN PEACE?

By Brian O. C. Gardiner*

Many years ago (Gardiner 1959) I remarked how dead examples of the copper underwing (*Amphipyra pyramidea* L.) could nearly always be found inside attic windowsills. This was before the separation of this moth into two species, *pyramidea* and *berbera.* (Fletcher 1967) Since then I have from time-to-time noticed one or other of them in many similar situations, but particularly in outdoor sheds and barns. Indeed, so many did I at times come across in such situtations that I wondered if they had not deliberately chosen to creep into such locales as they felt their end was approaching. While it can be argued that memory can play one false, I have over the years had the distinct impression that it is by far the commonest moth, in terms of percentage of the total moth population to be so found. Recently chance came my way to carry out a survey of the actual numbers involved. The chance was presented by becoming involved in the search for housing, both for friends and my own children. This involved visiting and viewing many houses in the Cambridge area during the autumn and winter of 1985. Many of these had garden sheds, often neglected and in poor condition, hence ideal as habitations for all sorts of insect. Noticing a specimen of the copper underwing in one of the earlier houses visited, I decided to keep a specific look out for it in future. Rather to my satisfaction the results showed that my earlier impression was correct. It was not only present in most of the properties visited, but was by far away the commonest moth to be found. Due, however, to the fact that many of them were in poor condition, often partly or entirely (apart from wings) eaten by spiders, clothesmoths or larder beetles, it was not possible to determine the exact species involved and so no attempt was made to do this. It is likely, since both occur in the Cambridge area, that a mixed population was involved. The numbers of moths found are presented in Table 1.

These results quite clearly indicate that copper underwings like to enter sheds and attics and they then became trapped therein. It seems likely that this is due to their habit, like their congener, the mouse (*Amphypyra tragopoginis* Clerk), of being rather secretive and tending to scuttle rather than fly. One might also assume that the members of this genus are thigmokinetic and having found the crack under the door or around the windowsills have crept in, in order to have the feel of all-round comforting protection from pre-

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| Location | Number | Copper Underwings | Yellow Underwings | Other Moths |
|---|---|---|---|---|
| Sheds | 17 | 23 | 7 | 8 |
| Attics | 27 | 14 | 4 | 12 |

Table 1. Numbers of copper underwings, yellow underwings and other moths found trapped on the windowsills of sheds and attics in Cambridge during autumn/winter 1985.

dators. When the time has come to leave the following day, or when danger is passed, they have taken the wrong turning and ended up trapped in the shed or attic. One explanation as to why they cannot find their way out again, as they did to enter, could be that on entering they are going towards a dark place, but in order to exit they would of course be heading towards the light shining through the window. It is more than likely that they also enter other rooms but when these are in constant use they get the opportunity to escape when the windows are regularly opened.

## References

Fletcher, D. S. (1967) *Amphipyra pyramidea* Linnaeus and *A. berbera* Rungs (Lep., Noctuidae), two species confused. *Entomologist's Gaz.* **19**:91-106.

Gardiner, B. O. C. (1959) The Lepidoptera of a Dover Garden. *Entomologist's Gaz.* **10**: 2-16.

PIMPINEL PUG (EUPITHECIA PIMPINELLATA HUBN) (LEP.: GEOMETRIDAE) IN LEICESTERSHIRE — A single male of this species was caught in the Rothamsted Insect Survey Light trap at Empingham (Site No. 280, O.S. Grid Ref. SK 953 087) on the night of 5/5-viii-1986. The identity of the specimen was confirmed by examination of the genitalia. So far as I am aware this species has not previously been recorded in Leicestershire.

Thanks are extended to M. Tyler for operating the trap at Empingham. ADRIAN M. RILEY, Dept. Entomology, Rothamsted Experimental Station, Harpenden, Herts, AL5 2JQ.

ANTICHLORIS ERIPHIA F (LEP.: CTENUCHIDAE) A CORRECTION — In a recent account (Barnett, R. *Ent. Rec.* **98**: 240) a specimen of *A. eriphea* taken in 1985 was claimed as the first record for Britain. It has since been drawn to our attention that the first British specimen was recorded in 1980 (Evans, K. *Ent. Rec.* **93**: 230) and a second was noted in 1982 (Young M. *Entomologist's Gaz.* **34**:53). PAS.

# A HISTORY AND INVESTIGATION INTO THE FLUCTUATIONS OF *POLYGONIA C-ALBUM* L.: THE COMMA BUTTERFLY

By COLIN PRATT*

(*Concluded from p. 27*)

## Climate

In entomological folklore it has been said that "to see many *Polygonia c-album* L. in the spring fortells a good year for butterflies" (Pard, 1980). More likely, it was also said that sunless summers greatly reduced the Comma's numbers (Frohawk, 1914) and that "a conjunction of unusually severe winters, and wet summers" caused disappearances (Dale, 1890) – this was again proposed more recently (Dennis, 1977) – and that the seven consequecutive wet years from 1875 to 1881 combined with the severe winter of 1880/1 caused decline (Dale, 1890). It has been shown that the species benefits from warm weather from May to September in part of Finland (Nyland) (Ekholm, 1975); it has also been intimated that the lower temperatures and less sunshine over the summer months endured in this country between 1870 and 1920 caused the decline of the Comma (Turner, 1986). One shrewd observer thought that the 20th century phenomena "only a temporary expansion of range due to fine summers and mild winters. . . . in spite of the severe frosts in May, the Comma seems to be even more abundant this season" (Bagnall-Oakeley, 1935). The foremost authority on *c-album* in early years was quite specific and said that "the finest specimens I have ever bred have been when very early warm springs have tempted the butterflies out, and ova being obtained and hatched, the larvae have been subjected to a return of cold unseasonable weather, and have fed up slowly. If cold came before the ova hatched they perished, if not placed in a warm room" (Hutchinson, 1896). Other experts were less definite and thought that the decline was caused by "some subtle and unnoticed change of climate" (Barrett, 1893). Thus there has been a consensus that, like *A. crataegi* which suffered large losses after wet Septembers (Pratt, 1983) and *L. camilla* whose range fluctuated with June temperatures (Pollard, 1979), this species is unusually affected by prevailing weather – in favourable seasons occurring in abundance in three broods and in adverse seasons occurring in an apparently single autumnal brood as a rarity. The decline of *c-album* has other similarities with that of *A. crataegi*; both enjoyed similar geo-

*5 View Road, Peacehaven, East Sussex.

graphical distributions in Great Britain and Europe and both lost colonies throughout the 19th century with sudden accelerating declines after about 1870. Indications might be gained from the fact that the insect mainly retreated to the hop-growing areas where "the situation had to be sheltered from cold winds, yet airy; moist but not wet; its climate as gentle and warm as could be found in England" (Mathias, 1959).

Examining the monthly, seasonal, annual, and decadal weather records (Brody, 1916; Central Statistical Office, 1940-1985; Glasspoole & Hancock, 1936; Manley, 1974; Meteological Office, 1952; Nicholas & Glasspoole, 1932) from the 17th century to date, there is no evidence that snow and, surprisingly, sunshine and rainfall, is involved in the fluctuations of this butterfly. There is only one significant short-term climatic coincidence with the years when *c-album* was uncommon – seasons of comparative rarity were usually preceded by a warm February, followed by overall low April to June temperatures, with the first and last mentioned months having the best individual correlations. The insect suffered sudden drops in numbers, or was unusually infrequent, in 1813, 1816, 1874, 1876, 1877, 1882, 1884, 1885, 1894 and 1913 – in every case except 1877 June was a cold month, and except for 1816 every February was warm. Despite some similarity with Mrs. Hutchinson's observations, there is no further relationship with the month of February. In the longer term, from 1811 to 1825 inclusive there were only three seasons which enjoyed warm June's and, 1877 and 1878 apart, there was a unique period of such weather from 1871 to 1886 inclusive, and more followed. Excluding 1905, there were no warm June's from 1901 to 1909 and, excluding 1925, from 1922 to 1929. More favourable and varied temperatures during this month then followed for many years. Over the present decade the first two June temperatures were average or less and the following three all above average. However, a cold June did not preclude a season of abundance, although warm months did predominate by a ratio of seven to three in those years of high numbers listed earlier. The trends in cold June's were matched by the seasonal figures for Spring (March/April/May); there was only one cold Spring during the 1840's but eight over the following decade. Excluding the mid 1890's, from 1876 to 1910 there were only two Springs with much above average temperatures (1659 to 1973), and most were cool; but from 1918 to mid-century a warmer regime prevailed – from 1933 to 1950 only one Spring was really cold (1941). Even after the middle of this century until the present decade there have been only eight cold Springs and a dramatic rise in these temperatures took place in 1981 and 1982 when the highest Spring temperatures for 20 years were recorded. This short period coincided with an

unprecedented rise in numbers in northern districts, accompanied by territorial gains. "Temperature produces its results on the abundance by affecting the activities and rates of development of all stages of Lepidoptera, the activities of the natural enemies, and the rates of development of the food-plant" and "reductions in breeding and egg-laying activities that follow reductions in activities caused by unfavourable temperatures can result in scarcities or extinctions" (Beirne, 1955); for example, *A. urticae* was nearly extirpated in north-east England after the bad summers of 1902 and 1903, and at Oxford in 1918. Nevertheless, despite some correlations, the onset of warmer Springs in 1918 had been preceded by the spread of the butterfly into nearly half a dozen counties and the cold June's of the 1920's when the species was rapidly spreading shows that the weather over the second quarter of the year was not singularly or even primarily responsible for the distributional fluctuations under review; but not surprisingly, there is some evidence that low temperatures during this period did at least contribute to short term numerical variations.

Long term Winter temperatures (December/January/February) played a larger part in the territorial fluctuations of this insect. The lowest decadal average Winter temperatures recorded in this country since 1790 came during the first two decades of the 19th century; this coincides precisely with the butterfly's decline in southern counties and with Stephens observation of recent widespread scarcity, made in 1828. Similarly, the highest of these temperatures recorded during the 19th century came during the 1850's

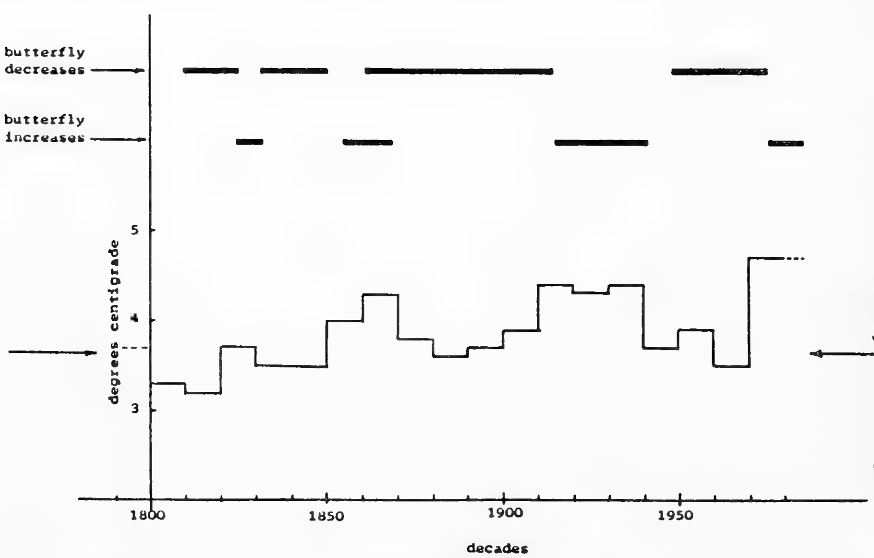


Fig. 1 Mean decadal central England winter temperatures 1800 – date with territorial fluctuations of *P. c-album* (from Manley, 1974, and Central Statistical Office, 1985).

and 1860's; this coincides precisely with the increase in distribution in northern counties. The worst period of sequentially cold winters since the early 19th century took place over the late 1880's and early 1890's (1886-1888, 1891-1893 inclusive) and a large number of county-wide declines and extinctions took place at this time. During this century there was a dramatic increase in these temperatures after 1909 lasting until the second world war, resuming again after 1970; the change was so great that the highest half decade temperatures since the 1730's were recorded. The trend can also be illustrated by the number of warm winters; excluding 1917, there was a unique period of sequentially warm winters from 1910 to 1927 and, excluding 1934, 1936 and 1979, from 1930 to 1939 and from 1971 to 1984 inclusive; again, this coincides well with the distributional fluctuations of the butterfly documented earlier – even down to one of the temporary halts during the 1930's.

The evidence suggests that a significant *alteration* in long term winter temperature trend predominently affects distribution, rather than variations around a particular temperature value; this would explain the fact that the Comma's widest distribution ever, within recorded entomological history, was recorded during the early 19th century (being almost equalled in about 1870); this peak was preceded by a century which contained only two decades of above average (1660 to date) winter temperatures, the 1740's and 1790's . . . . or did the expansion of commercial hops into Scotland and elsewhere over the last quarter of the 18th century introduce *c-album* with it? At any event, those published comments that exist from such an early era at least confirm that the species was not thought to be a particularly common one in many places away from its hop-gardened heart-lands, especially when compared to nowadays, despite the more northerly range – see map 1.

It is noticable that it takes a minimum of three to five years of a consistent and substantial change in these temperatures for territorial alterations to occur, or at least be large enough to be recognised, but a decade is the most applicable period.

It could be expected that the areas where *c-album* successfully took refuge were those that enjoyed warmer winters. The butterfly almost certainly survived in the Oxford district, within an outcrop of hop-gardens, and detailed local 19th century temperature records have been published (Lewis, 1937); analysis shows that the winter temperatures recorded consistently exceeded those calculated for central England (Manley, 1974) during the same period by about three degrees F.

There is a short period of apparent anomaly during part of the 1860's, where both increases and decreases in territory were noted; however, the former were reported from the north and the latter were all south of Liverpool.

"The mortality of insects caused by winter cold is probably the main factor controlling the abundance of most insects in temperate latitudes" and "the northward distribution of insects in the Northern hemisphere is often limited by the annual minimum temperature" (Uvarov, 1931). Furthermore, "populations of species that just reach the northern limits of their ranges in the British Isles have been affected detrimentally" (Beirne, 1955) by severe winter cold. But in this instance it was not minimum temperature that promoted fluctuation, rather a series of different temperatures over a number of years breaking from an established trend.

But this is not the end of the climatic coincidences. Examining the isopleths on a map of the average means of relative humidity (1921-1935) (Meteorological Office, 1952), there are only three areas in the British Isles which enjoy a relative humidity of below 75% during all three winter months – much of Aberdeenshire, a small portion of south Yorkshire, and by far the most extensive area, east of the Welsh mountains from the Severn Valley almost to the north coast. The first mentioned adjoins the most northern reports of *c-album*, parts of Yorkshire have always had an unusual affinity for the insect (the species hung on here in isolation until at least 1902, with a similar positive history in more modern times), and the remaining area coincides well with that of the Comma when at its lowest ebb. A penchant for low humidity would explain the species survival in the colder, but less humid, parts of Europe and the fact that the butterfly was usually much less frequent in our coastal districts; this especially applies to western areas as there is no 19th century record from Cornwall and the insect was loath to colonise the west-facing Welsh coast. In Finland high frequency butterfly years are accompanied by an average drop in humidity of 14% (Ekholm, 1975). However, it is known that an increased westerly air flow took place in this country over the first half of this century starting in 1896, dramatically increasing after 1902, and peaking in 1923 (Lamb, 1965); being of a more humid character, this would seem to limit speculation from this quarter – at least as a singular factor – unless detrimental humidity levels were already attained during our more average winters, the combination with cold bringing the deleterious effect into play. Still, the insect retreated to, and survived almost exclusively in, refuges containing the lowest winter humidity in the country – the largest and southern-most also coinciding with the distribution of commercial hops (Kent apart).

That the primary decline in distribution of *c-album* was caused by climate, as opposed to the loss of hop, is demonstrated by the otherwise inexplicable early 19th century decline in the south-eastern hop-gardens and elsewhere along the south coast.

Thus at the times of the butterfly's main declines and increases in frequency and distribution there were differential climatic coincidences – and the evidence suggests that more than one seasonal variation was involved. The species distribution was primarily determined by long-term winter temperatures, which explains the losses during hibernation; whilst frequency in the shorter term was often detrimentally affected by low temperatures during the second quarter of the year, a time of known difficulty, which would have restricted numbers in the main autumnal flight by the limitation of the first brood – both of these factors being particularly prevalent over the latter years of the 19th century and just after.

**Summary**

Just after the middle of the 18th century the range of *c-album* reached at least as far north as county Durham and over the early years of the 19th century it enjoyed a distribution that reached as far as Edinburgh but by the middle years of that century the species had retreated from the north and declined in frequency in the south and east. Much territory was regained north of Liverpool after 1855, reaching a maximum in a return to Scotland in the very late 1860's. After about 1870 a much more serious retraction of range took place. This culminated in the butterfly being at its nadir in this country in 1913. The insect commenced a revival during the following season that eventually resulted in much, but not all, of its former distribution being regained – reaching another maximum in the middle years of this century. From that time until the mid 1970's another decline in northern distribution took place, accompanied by a drop in frequency in many other counties. In the mid 1970's another expansion of range commenced which has continued until the present time (1985).

All stages of *c-album* are unusually affected by temperature and the foremost causes of fluctuation were climatic. The most powerful was that of long-term winter trends and sequences, which coincided with territorial fluctuations – higher temperatures gains, lower temperatures losses; low temperatures during the second quarter of any year also often coincided with low numbers.

Prior to this century the history of the Comma in this country was intimately bound with that of commercial hop-growing; the decline in acreage outside of the prime counties over the first three-quarters of the 19th century and its sudden collapse in distribution during the 1870's, and later, significantly contributed to the synchronous decline suffered by *c-album*. In addition, increasingly efficient insecticidal sprays commenced in general use on hops after 1883 and this, and other practices, further limited the num-

bers of all lepidopterous larvae successfully reaching maturity on the plant. Nevertheless, the insect almost exclusively retreated in distribution to those counties in, and adjacent to, those where hops were still farmed, these being the areas of lowest winter humidity. There is considerable documentary evidence gained from extensive field experience, to suggest that at around the turn of the century, due to changes in hop culture, the butterfly's primary foodplant changed from hop to stinging nettle.

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## References and Bibliography

Agassiz, D., 1981. *Lepidoptera of the Isles of Scilly*.

Allan, P. B. M., 1943. Substitute Foodplants. *Entomologist's Rec. J. Var.*, **55**: 1-3.

Anonymous, 1911. Report of the Proceedings of the Entomological Society of London, 1/2/11. *Entomologist's mon. Mag.*, **22**: 97-98.

Archer-Locke, A., 1979. Late Emergence of Comma Butterfly. *Entomologist's Rec. J. Var.*, **91**: 310.

Bagnall-Oakeley, H. K., 1935. Note. *Sussex County Magazine*, **9**: 522.

Baker, P. J., 1977. The Polyphagous Habits of *Polygonia c-album* (L). *Entomologist's Rec. J. Var.*, **89**: 156-157.

Balfour-Browne, F., 1944. Substitute Foodplants. *Entomologist's Rec. J. Var.*, **56**: 104.

Barrett, C. G., 1893. *The Lepidoptera of the British Islands*, **1**. Reeve, London.

Bath, W. H., 1893. Observations on *Vanessa c-album. Entomologist*, **26**: 338-342.

Baynes, E. S. A., 1964. *A Revised Catalogue of the Irish Macrolepidoptera*. Classey, Hampton.

——————, 1970. *Supplement to a Revised Catalogue of Irish Macrolepidoptera*. Classey, Hampton.

Beirne, B. P., 1955. Natural Fluctuations in Abundance of British Lepidoptera. *Entomologist's Gaz.*, **6**: 21-52.

Bishop's Stortford & District Natural History Society, 1949. *Macrolepidoptera of Bishop's Stortford and District*.

Bretherton, R. F., 1939. A List of the Macro-lepidoptera of the Oxford District. *Ashmolean Natural History Society of Oxfordshire Proceedings & Report for 1939.*

Brodie, F. J., 1916. The Incidence of Bright Sunshine over the United Kingdom during the Thirty Years 1881-1910. *Quarterly Journal of the Royal Meteorological Society,* **42**: 23-38.

Broom, P. L., 1977. An Unusual Brood of Polygonia c-album (L.) f. *hutchinsoni* Robson. *Entomologist's Rec. J. Var.,* **89**:35.

Buckler, W., 1886. *The Larvae of the British Butterflies and Moths,* **1**. Adlard, London.

Bull, J., 1897. The fluctuation in numbers of Sedentary Species of Lepidoptera. *Entomologist's Rec. J. Var.,* **9**: 273-276.

Burgess, A. H., 1964. *Hops.* Interscience, New York.

Carrick, R., 1936. Experiments to test the efficiency of protective adaptation in insects. *Trans. Roy. Ent. Soc. Lond.,* **85**: 131-140.

Central Statistical Office, 1940. *Annual Abstract of Statistics.* HMSO.

—————————, 1950. *Ibid.*

—————————, 1960. *Ibid.*

—————————, 1970. *Ibid.*

—————————, 1980. *Ibid.*

—————————, 1985. *Ibid.*

Chalmers-Hunt, J. M., 1960. *The Butterflies and Moths of Kent,* **1**. Arbroath.

Collinson, W. E., 1970. *Butterflies and Moths of Halifax and District.*

Coppock, J. T., 1964. *An Agricultural Atlas of England and Wales.* Faber & Faber, London.

Dale, C. W., 1886. *Lepidoptera of Dorsetshire.* Ling, Colchester.

———— , 1890. *The History of our British Butterflies.* Kempster, London.

Dennis, R. L. H., 1971. The status of *Polygonia c-album* L. in north Wales. *Entomologist's Rec. J. Var.,* **83**: 305-309.

————, 1977. *The British Butterflies.* Kempster, London.

Dennis, R. L. H., 1971. The status of *Polygonia c-album* L. in north Wales. *Entomologist's Rec.J. Var.,* **83**: 305-309.

————, 1977. *The British Butterflies.* Classey, Faringdon.

Dobson, F., 1979. *Lichens.* Richmond.

Donovan, C., 1936. *A Catalogue of the Macrolepidoptera of Ireland.* Burrow, London.

Downes, J. A., 1948. The History of the Speckled Wood Butterfly (*Pararge aegeria*) in Scotland, with a Discussion of the Recent Changes of Range of other British Butterflies. *Journal of Animal Ecology,* 1948: 131-138.

Duddington, J., & Johnson, R., 1983. *Butterflies and Larger Moths of Lincolnshire and South Humberside.*

Edwards, W., & Towndrow, R. S., 1899. *The Butterflies and Moths of Malvern.* "Advertiser", Malvern.

Ekholm, S., 1975. Fluctuations in Butterfly Frequency in Central Nyland. *Notulae Entomol.,* **55**: 65-80.

Firmin, F., & Pyman, G. A., et al, 1975. *Guide to the Butterflies and Larger Moths of Essex.* Essex. Essex Naturalists Trust.

Fletcher, T. B., 1936. Wasps as enemies of butterflies. *Entomologist's Rec. J. Var.,* **21**: 10-11.

Ford, E. B., 1945. *Butterflies.* Collins, London.

Ford., M. J., 1982. *The Changing Climate : Responses of the Natural Fauna and Flora.* Allen & Unwin, London.

Fraser, F. C., 1961. A Note on the Ecology of *Polygonia c-album* L. *Entomologist's Rec. J. Var.,* **46**: 242.

Frohawk, F. W., 1914. *Natural History of British Butterflies,* **1**. Hutchinson, London.

Gardner, W., 1913. Notes on the Distribution of *Polygonia c-album. Entomologist's mon. Mag.,* **24**: 89-90.

Garland, S. P., 1981. *Butterflies of the Sheffield Area.* Sheffield City Museum, Sheffield.

Glasspoole, J., & Hancock, D. S., 1936. The Distribution over the British Isles of the Average Duration of Bright Sunshine: Monthly and Annual Maps and Statistics. *Quarterly Journal of the Royal Meteorological Society,* **62**: 247-259.

Goater, B., 1974. *The Butterflies and Moths of Hampshire and the Isle of Wight.* Classey, Faringdon.

Harper, G. W., & Waller, W. E., 1950. Notes on Breeding the First Generation of *Polygonia c-album. Entomologist,* **83**: 145-148.

Harris, M., 1775. *The English Lepidoptera.* Robson, London.

Heath, J., 1970. *Provisional Atlas of the Insects of the British Isles,* Part 1. BRC, Huntingdon.

——————, 1974. *A Century of Change in the Lepidoptera. In.:* Hawksworth, D. L., *The Changing Flora and Fauna of Britain,* pp. 275-292.

——————, 1975. *Provisional Atlas of the Insects of the British Isles,* Part 1. BRC, Huntingdon.

——————, 1982. *Distribution Maps of the Butterflies of the British Isles.* BRC, Huntingdon.

——————, Pollard, E., Thomas, J. A., 1984. *Atlas of Butterflies in Britain and Ireland.* Viking, Middlesex.

Heslop, I. R. P., 1930. *Polygonia c-album* and *Thecla w-album* in Somerset. *Entomologist,* **63**: 140-142.

—————————— 1967. A 1958 Survey of the Butterflies of Blackmoor Copse Nature Reserve. *Entomologist's Rec. J. Var.,* **79**:296-302.

Higgins, L. G., & Riley, N. D., 1970. *A Field Guide to the Butterflies of Britain and Europe.* Collins, London.

Hodgson, S. B., 1936. The Comma Butterfly (*Polygonia c-album*) in Hertfordshire. *Transactions of the Hertfordshire Natural History Society*, **20**: 1:43-46.

Howarth, T. G., 1973. *South's British Butterflies.* Warne, London.

Hutchinson, E. S., 1881. On the supposed extinction of *Vanessa c-album. Entomologist,* **14**: 250-252.

———, 1896. *Vanessa c-album. Entomologist,* **29**: 312.

Johnson, E. E., 1955. Late Appearance of *Polygonia c-album* L. *Entomologist's Rec. J. Var.,* **67**: 34-35.

Kirby, W. E., 1909. *Butterflies and Moths of the United Kingdom.* Routledge, London.

Lamb, H. H., 1965. Britains Changing Climate. *In*: Johnson, C. G., & Smith, L. P., The Biological Significance of Climatic Changes in Britain. *Symposia of the Institute of Biology, No. 14.* Academic Press, London.

Le Pard, G. F., 1980. The Folklore of the Lepidoptera. *Entomologist's Rec. J. Var.,* **92**: 270-272.

Lewis, E. S., 1951. *Polygonia c-album* L. *Bull. amat.Ent.Soc.,* **10**: 47.

Lewis, L. F., 1937. Variations of Temperature at Oxford, 1815-1934. *Meteorological Office, Professional Notes,* No. 7, **5**:2 -12 .

Manley, G., 1974. Central England Temperatures: monthly means 1659 to 1973. *Quarterly Journal of the Royal Meteorological Society,* **100**: 389-405.

Mason, G. N., 1901. A List of Lincolnshire Butterflies. *Transactions of the Lincolnshire Naturalists Union,* **1**: 76-85.

Massee, A. M., 1937. *The Pests of Fruit and Hops.* Crosby Lockwood, London.

Mathias, P., 1959. *The Brewing Industry in England 1700-1830.* Cambridge University Press.

Merrett, C., 1667. *Pinax*. London.

Meteorological Office, 1952. *Climatological Atlas of the British Isles.* HMSO.

Morris, F. O., 1870. *A History of British Butterflies.* Bell, London.

Nash, R., 1975. Butterflies of Ireland. *Proc. Brit.ent.Nat.Hist.Soc.,* **7**: 69-73.

Newman, E., 1871. *An Illustrated Natural History of British Butterflies*. Allen, London.

Newman, L. H., 1950. Further Notes on the 1st Generation of *Polygonia c-album. Entomologist,* **83**:230.

Newman. L. W., 1908. Paper read to the City of London Entomological Society, 4/11/08. *Entomomolgist's Rec. J. Var.,* **20**: 309-310.

Nicholas, F. J., & Glasspoole, J., 1932. General Monthly Rainfall

over England and Wales, 1727 to 1931. *British Rainfall,* 1931: 299-306.

Parker, H. H., 1934. *The Hop Industry.* King, London.

Perring, F. H., & Walters, S. M., 1976. *Atlas of the British Flora.* EP Publishing, Wakefield.

Pollard, E., 1979. Population Ecology and Change in Range of the White Admiral Butterfly *L. camilla* L. in England. *Ecol. Ent.,* **4**: 61-74.

Pratt, C. R., 1981. *A History of the Butterflies and Moths of Sussex.* Brighton Borough Council, Booth Museum of Natural History.

————, 1983. A Modern Review of the Demise of *Aporia crataegi*: the Black-veined White. *Entomologist's Rec. J. Var.,* **95**: 45-52, 161-166, 232-237.

Pyman, G. A., 1975. *Guide to the Butterflies and Larger Moths of Essex.*

Riley, N. D., 1929. The Comma Butterfly in England. *Nature,* 26/10/29; 653.

Routledge, G. R., 1909. The Butterflies of Cumberland. *Transactions of the Carlisle Natural History Society,* **1**: 98-113.

Rutherford, C. I., 1983. *Butterflies in Cheshire.*

Sandars, E., 1955. *A Butterfly Book for the Pocket.* Oxford University Press.

Sheldon, W. G. , 1930. *Polygonia c-album* and *Thecla w-album* in Somerset. *Entomologist,* **63**: 140-142.

Smith, L. P., 1968. *Seasonable Weather.* Allen & Unwin, London.

Smith, S. G., 1948. The Butterflies and Moths found in the Counties of Cheshire, Flintshire, Denbigshire, Caernarvonshire, Anglesey, and Merionethshire. *Proceedings of the Chester Society of Natural Science, Literature, and Art,* **2**: 6-250.

————, 1949. The Butterflies and Moths found in the County of Montgomeryshire. *Preceedings of the Chester Society of Natural Science, Literature, and Art,* **3**: 4-71.

Stainton, H. T., 1857. *A Manual of British Butterflies and Moths,* **1**. Voorst, London.

Standfuss, M., 1900. Synopsis of Experiments in Hybridization and Temperature made with Lepidoptera up to the end of 1898. *Entomologist,* **33**: 161-167.

Stephens, J. F., 1827/8. *Illustrations of British Entomology,* 2. London.

Theobald, F. V., 1930. Notes on Insects Feeding on Hops in 1928 and 1929. *Entomologist,* **63**: 7-9.

Thomas, J., & Webb, N., 1984. *Butterflies of Dorset.* Dorset Natural History & Archaeological Society, Dorset.

Thomson, G., 1980. *The Butterflies of Scotland.* Croom Helm, London.

Tulloch, J. B. G., 1936. The Great Frost of May, 1935, and its Effects on Butterfly Life. *Entomologist*, **69**: 54-55.

Turner, J. R. G., 1986. Why are there so few butterflies in Liverpool? *Antenna*, **10**: 1, 18-25.

Uvarov, B. P., 1931. Insects and Climate. *Trans. Ent. Soc. Lond.*, **79**: 1-247.

Walker, J. J., 1938. The Comma Butterfly, *Polygonia c-album* (Linn.): its Decadence and Revival as a British Insect. *Transactions of the Society for British Entomology*, **5**: 282-290.

Warren, R. G., 1975. *Atlas of the Lepidoptera of Staffordshire*, part 1, Butterflies.

Warrey, H., 1962. *Polygonia c-album. Entomologist's Rec. J. Var.*, **47**:25.

West, B. B., 1949. Bedfordshire Butterflies. *The Bedford Naturalist*, **3**: 16-21.

Westwood, J. O., 1854. *The Butterflies of Great Britain with their Transformations.* Routledge, London.

White, E. S., 1953. Birds and Butterflies. *Entomologist's Rec. J. Var.*, **38**: 55.

The vast majority of the records correlated for this paper were gleaned from the *Entomologist, Entomologist's Record and Journal of Variation, Entomologist's Gazette,* and the *Entomologist's Monthly Magazine;* also consulted were the *Victoria County Histories* of Norfolk, Suffolk, Cambridgeshire, Huntingdonshire, Hertfordshire, Essex, Surrey, Kent, Bedfordshire, Somerset, Herefordshire, Gloucestershire, Hampshire, Oxfordshire, Rutland, and Sussex.

# Notes and Observations

A PRODUCTIVE OAK IN A S. E. LONDON WOOD. — In the eastern portion of Oxleas Woods SSSI at Shooters Hill (over whose fate, alas, the proverbial sword of Damocles now hangs) there stands a fine oak, massive, spreading, and still vigorous. On 30th October 1984 this tree was found to have, on one side of its trunk, a number of smallish sap-runs, tending to coalesce into a diffuse sappy area much frequented by wasps and mostly small Diptera. The latter were few in species — I need mention only *Dryomyza anilis* Fall., whose numbers reached a peak on 11th November. It was the Coleoptera that proved unexpectedly interesting, in quality if not in quantity. To obtain them, however, was far from easy owing to the effort needed to prise off small pieces of the thick, extremely tough and tenacious bark, under and between which the beetles were to be found half hidden by sappy accumulations. A few also were sifted out of debris at the foot of the tree where a little sap had penetrated. They were (omitting species of no particular note):—

**Epuraea guttata* 01. and *E. pusilla* Ill., both singly; **Cryptarcha strigata* F., 3, and 3 more on 17.v.85; *Carpophilus sexpustulatus* F., **Thamiaraea cinnamomea* Grav. and **T. hospita* Mark., all singly; *Atheta taxiceroides* Munst., plentiful on 11.xi but hard to secure, running in warm sunshine in and out of crevices and fissures of bark.

I had never before encountered any of these in the S. E. London area (not even the widespread *E. pusilla*); but what is especially noteworthy is the occurrence of the four starred species traditionally associated almost exclusively with *Cossus*-infected sap, though I could find no evidence of the latter's presence. Compare my remarks in 1985, *Ent. Rec.* **97**: 32-3, regarding an undoubted *Cossus* oak at Blackheath (which yielded none of the above!). I have now to retract the suggestion there put forward that because of the extreme rarity of *Cossus* in this area to-day, its specifically associated beetles probably no longer exist there. On the contrary, it now seems that in the absence of *Cossus* they can make do quite well with uninfected sap (and may increasingly be obliged to do so).

*A. taxiceroides* was a notable find, since not only is the species new for the London district but the above habitat also is unrecorded for it; previous captures (not yet numerous) connect it with nests and especially squirrels' dreys. Experience points to it as an autumn species, and indeed it was found the following spring to be replaced on the oak by the closely-allied *A. nigricornis* Thoms.

Had this profitable tree only been discovered earlier in the season (assuming the sap was then flowing) other notable insects might well have been obtained – including, possibly, the remaining three members of our little band of recognized *'Cossus'* beetles. That is, apart from *Tachinus bipustulatus* F. which, formerly not rare, seems unaccountalby to have died out (or very nearly so). The absence of *Soronia grisea* L. at the Oxleas oak, contrasting with its abundance at the Blackheath one, was surprising.

It remains only to say that, as foreseen, this noble tree quickly healed its wounds by fresh growth, all sap flows having dried up by the following June; hardly a trace now remains of its previous scarring. I am grateful to my friend Alex Williams who on his first visit to the wood happened to light upon the tree and, having collected from it three of the above species, promptly informed me of the fact. – A. A. ALLEN.

A NOTE ON THE APPARENT LOWERING OF MORAL STANDARDS IN THE LEPIDOPTERA – It is a sad sign of our times that the National newspapers are all too often packed with the lurid details of declining moral standards and of horrific sexual offences committed by our fellow *Homo sapiens;* perhaps it is also a sign of the times that the entomological literature appears of late to be

heading in a similar direction. I published a short note on aberrant sexual behaviour in butterflies observed on Mount Kenya in 1983 (Tennent: 1984) and recently returned home from a spell abroad to find similar behaviour recorded in no less than three of the latest issues of different entomological journals (Hobbs: 1986, Knill-Jones: 1986, Winter: 1985). Unfortunately, I'm afraid there's more:—

I was in Morocco recently and spent some time in and around Oukaimeden in the High Atlas Mountains south of Marrakech. On the 11th of June 1986 I was lucky enough to stumble upon a thriving colony of *Cyaniris semiargus maroccana* just emerging in some long grass at ca. 2600 metres. Having taken some photographs I observed a cluster of four males flying closely around what I assumed to be a freshly emerged female sitting with her wings closed low down in the grass. Wanting photographs of a pair *in cop* I waited to see which, if any, of the males would be the successful suitor but soon realised that the object of their attention and affections was also a male. The attendant males vied with one another and each was curving his abdomen in a frantic attempt to make contact with the abdomen of the emerging male. The latter did not respond but was unable to escape as it's wings were still soft. It laboriously made it's way up the grass stem and was much buffeted by the others en route.

The situation became even more strange when a fresh female came to rest with her wings open on a grass stem no more than a foot away. One of the four males approached her, she immediately raised her abdomen and vibrated her wings but after a very cursory examination the male returned to the pack and continued forcing his attentions on his fellow. During the next hour or so I saw a further three groups of males, one of which contained eight individuals, behaving in a similar manner towards fresh males whose wings were not yet dry.

Males on the emergence ground outnumbered females by about five to one although the latter sex were still common. The females habitually rested with their wings open and were often visited fleetingly by passing males, however, I did not see any female being 'pestered'. The time was about midday.

To set the reader's mind at rest I should also record that I subsequently observed a number of 'normal' pairs *in cop*; at least some individuals had the furtherance of the colony at heart and the appearance of the colony next year is thereby assured.

Whatever next? !

**References:**

Hobbs R.1986. Comma butterfly attempting to copulate with a Small Tortoiseshell. *Ent. Rec.* **98**: 165;

Knill-Jones S.A. 1986. Courtship display between a Peacock and a Small Tortoiseshell (Lepidoptera: Nymphalidae) *Entomologist's Gazette* **37** : 82;

Tennent W. J. 1984. Fresh mountain air . . . . . ? *Ent. Rec.* **96** : 131-132;

Winter D. 1985. Misdirected Monarch mating behaviour (*Danaidae: Danaus plexippus*) or *Noblesse oblige*? *Journal of the Lepidopterist's Society* **39**(4) : 334.

W. J. TENNENT, 1 Middlewood Close, Fylingthorpe, Whitby, N. Yorkshire.

LOPHOSIA FASCIATA MG. (DIPT.: TACHINIDAE) IN THE LONDON SUBURBS, AND AN APPARENTLY NEW HOST RECORD. — A specimen of this elegant and distinctive Tachinid emerged (2.vii.86) from a puparium voided on or about 18th June by a hawthorn shieldbug, *Acanthosoma haemorrhoidale* L., taken on the 13th at Oxleas Wood SSSI, Shooters Hill. (As appears usual in such cases, the bug showed no sign of being troubled by the parasite and remained alive several more days.) Van Emden (1954, *Handb.Ident.Brit.Ins.* **10**(4a): 10) does not include *Acanthosoma* at all in his list of host-list of British Tachinidae, stating under *L. fasciata* (p. 21) only that it has been bred from the shieldbug *Aelia*. The latter has never occurred to me in this district, nor do I think it was present in the vicinity when my friend Dudley Collins found an example of the fly inside a window of his house at Carshalton Beeches (Surrey) several years ago. A possible host there might have been either of two other Pentatomoids, *Elasmucha grisea* and *Cyphostethus tristriatus*, both having occurred close by. *Lophosia fasciata* is always a scarce insect, which has probably been more often taken in the New Forest area than elsewhere; there, at least, it has been said to favour the flowers of parsnip. The present record is likely to be the first for Greater London, and perhaps also for West Kent. — A. A. ALLEN.

THE BRIMSTONE, GONEPTERYX RHAMNI L. EGG-LAYING ON DOCK. — During field work for the butterfly atlas project in Hertfordshire, at Westmill near Buntingford, on 12th June 1986, observations were made on a female brimstone which was exploring rough vegetation at the edge of a horse paddock near the River Rib. The butterfly eventually circled a small patch of curled dock (*Rumex crispus* L.) and appeared to be inspecting for egg-laying sites on both stems and leaves. This activity was watched for some five minutes, at which point an examination was made of the plants being used and newly-laid brimstone eggs were found. It was estimated that at least 10 eggs were laid in this time, almost entirely on one clump of the plants. These were in semi-shade but not near any other rough vegetation. In particular, no bushes of buckthorn *Rhamnus catharticus* L., the only one of the

usual food-plants found in the region, was present anywhere in the locality. The eggs were laid, as usual, singly either underneath the edge of leaves or occasionally on stems.

The next day, in the company of B. R. Sawford, a further examination of the plants was made, when 15 eggs were located, some on nearby plants, but most on the original patch. A couple of eggs and a portion of food plant were taken for rearing to see if the caterpillars would feed normally. Later, on 20th June, a return visit was made to try and find caterpillars in the wild, but unfortunately, the field had just been rough-cut, and, despite a detailed search of the debris, only one egg was discovered. The success of this abnormal food plant in the wild was not therefore established. With the eggs removed for rearing, however, one caterpillar hatched, but refused to eat the dock, and died. Whether this was a sickly specimen or whether the food plant was unpalatable, however, will never be known.

As a corollary to this observation, a record submitted by another observer, Mrs. J. King of Flamstead, for the Hertfordshire atlas also indicates that a female brimstone was watched laying eggs on dock (species not stated) at Flamstead on 16th July 1986. In this case it is not known whether buckthorn exists in the vicinity. However, while one record may be an aberrant coincidence two records separated in both time and space perhaps need further examination. TREVOR J. JAMES, North Hertfordshire Museums Service, Old Fire Station, High Street, Baldock, Hertfordshire SG7 6AR.

GLAENOCORISA PROPINQUA (FIEB.) (HET.: CORIXIDAE) IN WEST CUMBRIA. — I took two specimens of this local corixid in Lank Rigg Tarn (NY09.11) Cumbria on 12 May 1986. The tarn lies at an altitude of about 1,750 feet and is situated near the summit of Lank Rigg fell, in an exposed situation. *Glaenocorisa proppinqua* is an uncommon species and found mainly in northern Britain, but has also been recorded from Ireland, Scotland, Yorkshire and also Somerset. T. T. Macan in his *Key to the British Water Bugs* (1965, Scient.Pubs.Freshwat.biol.Ass. No16:67) states that the species is scarce in the Lake District and found only occasionally in tarns. Macan (1976, *J. Anim. Ecol.* **45**: 913-922) gives Hodson's Tarn as a locality for this corixid, and suggests that it is a casual migrant without a habitat in the Lake District. — R. W. J. READ, 43 Holly Terrace, Hensingham, Whitehaven, Cumbria CA 28 8RF.

THIRD-BROOD SPECIMENS OF ECTROPIS BISTORTATA GOEZE (LEP.: GEOMETRIDAE) — On October 13th 1986 a male of this species was observed at m.v. light at Dartford; this is particularly noteworthy in view of the poor summer conditions prevailing in

1986 and the fact that Chalmers-Hunt (*Butterflies and Moths of Kent* **3** 1968-81) gives no record of such specimens. The second brood here, according to my m.v. trap observations appears to extend over a period of about a month during July and August, rarely late June. However, two other possible third brood moths have appeared at the light – September 9th 1979 (second brood 12.vii-7.viii) and September 18th 1982 (second brood 5.vii-7.viii).

This Journal makes reference to several further examples – one in 1952 of which no detail is given (*Ent. Rec.* **65**: 48), two at Weston-super-Mare on November 10th 1956 (*Ent. Rec.* **69**: 20), Southend on September 15th 1969 (*Ent. Rec.* **82**: 16) and Wimbledon on September 9th 1970 (*Ent. Rec.* **83**:205). In addition the Essex Naturalists' Trust (*A Guide to the Butterflies and Larger Moths of Essex, 1975*) regarding voltinism in *bistortata* concludes "not infrequently yet again in September and early October." Unfortunately no detail is given as to how frequently, and exactly when and where. Regarding the standard textbooks only South (*Moths of the British Isles*, 1939) notes that specimens have been observed in September and October. One wonders if apparent third brood *bistortata* are as scarce and so localized as the few published records suggest? What is perhaps more important, without such records coming to notice by being published, changes in their distribution and frequency cannot be assessed. – B. K. WEST, 36 Briar Road, Bexley, Kent.

LATE RECORDS OF HYPSOPYGIA COSTALIS FAB. AND ORTHOPYGIA GLAUCINALIS L. (LEP.: PYRALIDAE) – Goater (*British Pyralid Moths*, 1986) gives both *H. costalis* and *O. glaucinalis* as being univoltine, flying in July and August. I recorded *H. costalis* from my garden light trap on 1st, 14th, 15th, and 16th October 1986 and a single *O. glaucinalis* on 14th October 1986. One possible explanation is that both species inhabited a fermenting compost heap, the heat from which advanced their development. IAN D. FERGUSON, 31 Cathcart Drive, Orpington, BR6 8BU.

POLYPHAENIS SERICATA (ESP) (LEP.: NOCTUIDAE). FIRST GUERNSEY RECORD FOR 80 YEARS. – On the evening of 14th August 1986 we were working the m.v. light at Petit Bot, at the bottom of a wooded valley on the south coast of Guernsey. We were just on the point of giving up after recording 45 species in approximately two hours when a very well-marked noctuid settled on the sheet. The moth, slightly smaller than *Noctua comes* (lesser yellow underwing), was pale green with fine black edging to the stigmata, a broad olive green terminal band and fine white markings dorsally to the antemedian and subterminal fascia. As if the markings on the forewing were not striking enough the hind

wings were burnt orange with a broad blackish brown terminal shading.

After some research the insect was eventually identified in *Atlas d'Entomologie Lepidopteres de France,* Tome II as *Polyphaenis sericata.* The distribution is given as 'all of France with the exception of the northern regions'. This moth is figured in Michael Chinery's new *Collins Guide to the Insects of Britain and Western Europe.*

This species was first recorded in Guernsey by the eminent local entomologist Mr. W. A. Luff in July 1872 at sugar and that specimen was figured in *Entomologist* **9**: 73. In Luff's article on Non-British insects published in the 1907 *Transactions of The Guernsey Society of Natural Science and Local Research* (now *La Societe Guernesiaise*) he states that he had taken several more specimens.

As far as local records show this was probably the first Guernsey record of this species for at least eighty years. RICH & MARGARET AUSTIN, Maymyo, Les Amballes, St. Peter Port, Guernsey. C.I.

EXPERIENCES WITH THE WHITE-BARRED CLEARWING, SYNANTHEDON SPHECIFORMIS D. & S. (LEP.: SESIIDAE) — I had long been aware that Mr. B. R. Baker, of Reading, was very knowledgeable about that fascinating family of moths, the clearwings. Accordingly, in May 1986, I rang him and asked if he could help me with *spheciformis.* Up to quite recent times here, *spheciformis* mines were made in alder (*Alnus sp.*). Then, following winter cutting by contractors supplying birch for steeplechase fences, the moth became reasonably plentiful in the stumps of birch. These stumps were usually between 1 and 8 cm diameter and an average of 24 cm above ground level.

Mr. Baker told me that the cutting of birch, on the heath south of Reading, had not been as great as usual; but that it might be possible to locate a few mines. Accordingly, on 14th May I joined him for a search of the Reading heaths. It was a cold day, with some persistent rain; our spirits were not much lifted by the observation that many pupae had been removed by birds. However, under Brian Baker's excellent guidance, we cut a few stumps which held possibilities, some showing clearly the exit prepared by the larva — a circle of bark 6 mm diameter, slightly discoloured, which gave under slight pressure.

In all, eleven sticks were cut. For their reception I had prepared a small aquarium (33cm x 24cm) with 8cm of sand covering the bottom. Into this I stuck my birch sticks, gave the sand a good watering, covered the top with a piece of plate glass, and placed the entire structure in a glasshouse. Unfortunately, when the sun shone, the aquarium misted up. Removing the glass top produced a breath of tropical heat. Before long the birch twigs had come into

full leaf. Rather ill-advisedly, as it happened, I decided to leave the top off the tank to allow more efficient evaporation. The following morning, the 2nd June, I arrived at about 10.30 hours to inspect and, to my joy, saw a large empty pupa case protruding from the top of a stick. My delight was soon tempered with apprehension when I realised that the recent occupant was now loose in the glasshouse. However, after a few moments with a net, I had secured a fine male *spheciformis*.

Having composed myself, I returned to the tank to dry the walls of the aquarium, when I was lucky enough to observe the appearance of a pupa thrusting through the bark of a birch twig. I give the timing of the whole operation, from this point until the imago was ready to fly:

1. Pupa broke through bark at 10.51 hrs. but protruded only 6mm. Pupa swelled and shrank several times, but made no forward movement.
2. At 11.12 hrs it suddenly wriggled and completed its protrusion. The pupa was black in colour and quite sharply pointed. The full protrusion measured 1.4cm.
3. At once the two antennae sprang free and the pupa burst. The insect emerged on its back, as it freed itself from the pupa case it righted itself by gripping first the pupal case and then the birch twig.
4. The moth rapidly climbed the twig (6 cm above the exit hole) and, after a brief pause, ascended the sides of the tank and began expanding its wings . Full expansion was achieved 19 minutes after eclosion. The wings at this point were held butterfly-like over the back.
5. After 11 minutes the wings were lowered into the normal position and the insect was ready for flight. The whole operation took 51 minutes.

I was particularly struck by the length of time the insect remained so vulnerable, particularly when the pupa remained partially protruded. For the record, 11 sticks produced 9 perfect moths – 5 males and 4 females. One stick, 3.1 cm diameter, yielded 3 pupae; but two of the largest stumps, some 8 cm diameter, produced no pupae, but masses of frass – suggesting that they contained only first year larvae. E. C. L. SIMSON, Crossbythwaite, Plowden Park, Aston Rowant, Oxford OX9 5SX.

AN UNUSUAL ABERRATION OF THE DUKE OF BURGUNDY FRITILLARY, HAMEARIS LUCINA L. – While observing these butterflies on Noar Hill, Hants on 8 June 1986 (and incidentally was pleased that they were in reasonably good numbers) an unusual aberration was seen. At first, on the wing, it looked like a

worn individual but when it settled I was surprised to see that the background colour of the forewings, instead of the usual brown, was a chalky white while the hindwings were normal. Fortunately I was able to obtain a few photographs.

It seems to have been an intermediate form of ab. *leucodes* Lamb as shown under Fig. 24, Plate 8, of *Aberrations of British Butterflies* by A. D. A. Russwurm, (Classey 1978). — S. L. MEREDITH, 5 Rutlish Road, Merton Park, London SW19 3AL.

ISCHNOPSYLLUS SIMPLEX ROTHSCHILD (SIPHONAPTERA) IN SCOTLAND — A female *Ischnopsyllus simplex simplex* Rothschild has been taken from a Natterer's Bat, one of its normal hosts, found dead at Thornhill, Stirlingshire, in August 1986. This flea does not appear to have been recorded from Scotland before. Natterer's Bats are not regarded as common in Scotland though activities by local bat groups are proving it to be slightly more so than previously realised. This bat was found freshly dead and as it was still warm this particular flea had not yet vacated its host.

The upsurge of interest in the conservation and distribution of the Chiroptera in this, the National Bat Year, should produce a corresponding growth in new data concerning their parasites. However, disturbing or handling bats solely in order to remove or examine parasites should be discouraged. It would be illegal under the protective provisions of the Wildlife and Countryside Act (1981) to do so without a licence. Some acarines (mites) found on the same carcase and on that of a Daubenton's Bat brought into the museum earlier in the year remain as yet unidentified. — E. G. HANCOCK, Art Gallery & Museum, Kelvingrove, Glasgow, G3 8AG.

EUPITHECIA ABIETARIA GOEZE (LEP.: GEOMETRIDAE) IN N. W. KENT. — A fine female of this rare species attended my garden m.v. light on July 21st 1986. Chalmers-Hunt (*Butterflies and Moths of Kent* 3, 1968-81) notes only three previous records for Kent, two of these being for N. W. Kent — Lee, 1861 and Gravesend, 1871 — the third being for E. Kent about 1925, while L. and K. Evans (*A Survey of the Macro-Lepidoptera of Croydon and N. E. Surrey*, 1973) lists one for Streatham, 15.vi.1957. Mature spruce plantations have never been a feature of this area, but mature ornamental conifers of many kinds abound and perhaps these have sustained this species at a low density. — B. K. WEST, 36 Briar Road, Bexley, Kent.

# Current Literature

**Country Life Guide to Dragonflies and Damselflies of Britain and Northern Europe** By **R. Gibbons.** 144 pp. numerous colour illustrations. Country Life Books 1986. Boards £12.95 limp £7.95.

It is pleasing to record that the general awareness of Odonata

is being matched by an increasing number of publications on this group, although dragonfly books always seem to retail at higher prices than corresponding butterfly books. This book is beautifully illustrated with photographs of living insects and the text is readable and informative. It would not seem possible to identify all the species covered with certainty from this book, but it does provide a useful companion to d'Aguilar's Field Guide (reviewed *Ent. Rec.* **98**:261). D.K.

**Collins Guide to the Insects of Britain and Western Europe** By **M. Chinery**. 320 pp. many col. illustrations. Collins 1986. Boards £10.95; limp £6.95.

This new work by Michael Chinery is a worthy complement to his "Field Guide" first issued in 1973. Whilst the latter provided a good introduction to biology and taxonomy, as well as illustrating set specimens, the current work aims at a much higher species coverage, with over 2000 illustrations of insects and other arthropods in natural poses – most useful for the field worker. A well produced and thoroughly recommended book.

**Breeding butterflies and moths: a practical handbook for British and European species** By **Ekkhard Friedrich**, translated by **Stephen Whitebread** and edited by **A. M. Emmet**. 176pp. 47 figs. Harley Books 1986. Boards £20.00; limp £9.95.

Originally published in Germany in 1975, this work has been translated into French and now English, the current edition having been expanded and updated with additional contributions from J. Reid and B. O. C. Gardiner. Following an introductory section on the use of the book, the work divides into two parts: Part I contains a general introduction to the fundamentals of breeding, equipment and techniques, oviposition, larval rearing, pupation and emergence, followed by short sections on killing and conservation. Part II comprises detailed rearing instructions. Following a general introduction, each species or group of species is treated under the headings of mating and pairing, oviposition, rearing of larva, overwintering, pupating and foodplants. The microlepidoptera are treated in a more general fashion, usually on a family basis. The work concludes with a bibliography and compilation of useful information on suppliers, and an index to species and foodplants.

The emphasis throughout this book is an entirely practical one; it is packed with information and tips and there can be few breeders of Lepidoptera who would not benefit from reading it. Not all available techniques are covered – for example the highly successful soil-free techniques for pupating Sphingidae are omitted – but this does not detract from the book's value. Foodplant details are only

given for a few species, so those rearing British material will need Skinner's *Moths of the British Isles* and P. B. M. Allan's *Larval foodplants.* Those attempting European species will also need access to Forster and Wohlfaht *Die Schmetterlinge Mitteleuporas.*

Criticisms of this work are few and minor, for example some of the botanical references have newer editions than those cited. The book, is well presented, and highly recommended for all those interested in breeding Lepidoptera. PAS.

**RSCN Guide to Butterflies of the British Isles** By **J. A. Thomas.** 160pp. many maps and colour illustrations. Country Life Books 1986. limp £4.95.

One wonders how many more books on British butterflies can be produced – a recent visit to a local bookshop produced a tally of nine guides on the shelf! It is very difficult to find much that is new in this book, but the approach and presentation is very good. The photographs of living insects are pleasing, and each species is considered on a two-page spread under the headings of adult identification, young stages, habitats and behaviour, and distribution and status (with map). An excellent feature is a habitat sketch for each species indicating where one might expect to find eggs, larva and pupa. The text is free of jargon, the price reasonable and the authors expertise well used.

**An Atlas of the Carabidae (Ground beetles) of Northumberland & Durham.** By **M. D. Eyre, M. L. Luff,** and **S. G. Ball.** 96pp Northumberland Biological Records Centre Special Publication No. 2, 1980. Obtainable at £5.50 post free from the Hancock Museum, Barras Bridge, Newcastle-upon-Tyne, NE2 4PT.

This comprehensive work follows the pattern set by the first publication in the series (reviewed *Ent. Rec.* **98**:36). The format, lay-out, and method of recording is practically the same, except that an index to specific names is added; these details need not, therefore, be again noted here. There is however one very marked improvement, in that the distribution maps are all printed the same way up.

Here too, sources of records are fully discussed, and again Hardy and Bold figure very largely among the early recorders. A number of Fowler's (1887) and Moore's (1957) records are shown to be erroneous, being in fact attributable to Cumberland and not to the region under study. Species to be deleted, or at best very doubtful, are *Notiophilus 4-punctatus, N. rufipes, Dyschirius angustatus, Thalassophilus longicornis, Trechus fulvus, Bembidion semipunctatum, Agonum nigrum, A. 6-punctatum, Harpalus puncticollis, H. froelichi, H. 4-punctatus, H. tenebrosus, Anisodactylus*

*binotatus.* An interesting recent find is a specimen of the very rare *Amara nitida* from Hamsterley Forest, Co. Durham, 1985 – much the most northerly record so far. As expected, the best-represented genus is *Bembidion.*

Students of our beetle fauna will find the data here assembled well worth their close attention, not least for the light shed on habitat preferences – which in a few cases do not fully agree with what generally obtains in the south. In all, this is a worthy second in a series which holds out great promise, and all concerned deserve congratulations on the outcome of their labours. – A. A. A.

**A Field Guide to the Caterpillars of Butterflies and Moths in Britain and Europe** By **D. J. Carter** and **B. Hargreaves.** 296pp. 35 colour plates. Collins 1986. Boards £9.95.

Any book on the identification of the larvae of British Lepidoptera is a welcome addition to our bookshelves, but an attempt to cover the European fauna in a single volume, even of the excellent "Field Guide" series, is bound to leave some readers with a sense of frustration. The authors have chosen to illustrate some 500 species, around 10% of the total butterflies and larger moths. Each species is considered under the headings distribution, description, habitat, foodplant and biology. The plates group insects according to larval foodplant – an excellent idea – and illustrations of many imagines appear in the margins opposite their respective larva. A plate of larvae easily confused with Lepidoptera is usefully included. The end-papers depict typical silhouettes of larve (an extended version of those appearing in the "Observer's" caterpillars). A concise bibliography is also included.

As a field guide for the general naturalist this is a very useful publication, although the reviewer was not entirely convinced by some of the illustrations, and did not agree with a number of the points raised in the text. The serious lepidopterist will be disappointed by this book (although it must be stressed that the authors make no claim of comprehensive coverage). The butterfly enthusiast is better served with Bodi's "The caterpillars of European butterflies", and the student of moths must return to diapause and continue to wait for an accurate and comprehensive account of lepidopterous larvae. PAS

**Butterflies East of the Great Plains – an Illustrated Natural History** by **Paul A. Opler** and **George O. Krizek.** John Hopkins University Press. Boards. £47.50.

A great many American lepidopterists reside in the populous Eastern States, yet the only comprehensive work on the butterflies

of this region until now has been the excellent Field Guide by Alexander Klots, published in 1951. This new book, *Butterflies East Of The Great Plains*, represents a change of emphasis, concentrating on biological relationships and ecology, rather than distribution and identification. Unlike its predecessor it unfortunately confines itself only to the United States instead of covering the whole of Eastern North America.

In the early pages the historical aspects of butterfly study are discussed, from colonial times onward, and it is interesting to learn that Linnaeus himself named seventeen species of North American butterfly. There follows several passages on the study of butterflies, classification and morphology. The sections on distribution and habitat, (where "life zones" for indicator species are discussed and illustrated by black and white photographs) and also those on butterfly behaviour and life history are highly informative and well written.

The main part of the book consists of species accounts of all butterflies reliably recorded from the Eastern States. Each is headed with the common and scientific name of the butterfly and subdivided into paragraphs under the familiar headings of Range, Habitat, Life History and descriptions of Adult and Early Stages. More unusual are the sections on butterfly nectar sources and Etymology – the latter being a unique feature of the book and useful for those unversed in classical mythology. Distribution maps accompany the text for the majority of species.

Most of the species dealt with are illustrated in a section of 324 colour plates of living butterflies. These are beautifully photographed in natural surroundings, but some are plainly inadequate for identification and although adult butterfly measurements are given in the text, there is no indication of scale on the plates. In my opinion this is where additional plates of specimens on a plain background would have been useful, though there seems to be a universal reluctance at present to use the cabinet specimen for illustration. The book does make the claim that its purpose is to emphasize the butterfly as a living organism, but the policy of photographing only live specimens does create difficulties when, for example, pointers for identification need to be demonstrated or a range of variation shown. Also I was surprised to see the Pyrenees given as a provenance for the illustrated examples of both *Proclossiana eunomia* and *Clossiana selene*. The former is admittedly an uncommon and local butterfly within the north-eastern States, but surely an indigenous *selene* could have been found to depict the rather distinct nearctic form. These are minor criticisms though for what is a beautifully produced and above all interesting book. As a natural history it is excellent, and well worth its price. – C. J. LUCKENS.

HELP WANTED — I am compiling an up to date list of the butterflies and moths of Northamptonshire, including the Soke of Peterborough (VC32). Any records welcome. J. W. WARD 109 Blandford Avenue, Kettering Northants NN16 9AS.



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# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

*(Founded by J. W. TUTT on 15th April 1890)*

## CONTENTS



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# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

*Edited by*
P. A. SOKOLOFF, M. Sc., C.Biol., M. I. Biol., F.R.E.S.

*with the assistance of*





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# *CICONES UNDATA* GUÉR (COLEOPTERA: COLYDIIDAE) NEW TO BRITAIN

By H. MENDEL* and J. A. OWEN**

On 19th. February 1984 two specimens of *Cicones* were collected from beneath a loose flake of bark on the trunk of a moribund sycamore, *Acer pseudoplantanus* L. in Windsor Great Park, Berks. In the field, the two specimens were provisionally identified as *C. variegata* (Hellwig) but direct comparison later showed that they were not this species. Reference to Vogt (1967) suggested that they were *C. undata*, a species which had not previously been recorded in Britain, and this was subsequently confirmed by comparison with specimens of *undata* at the British Museum (Natural History).

Using Joy (1932), *C. undata* keys out easily to the correct genus by the circular club of the antennae and the irregular depressions of the pronotum and the two species may be separated as follows:–

– Proportionally broader and less elongate (Fig. 1a); obviously more convex and with alternate interstices of the elytra raised. Pitchy, near black, elytra variegated with small reddish marks with white scales, forming irregular transverse bands. . . . . . . . . . . . . . . . . . . *variegata.*

– Proportionally narrower and more elongate (Fig. 1b); much less convex and with interstices of elytra flat. Reddish marks and white scaling on elytra more extensive to the extent that in many specimens the impression is of pale elytra with dark marks, rather than vice versa. . . . *undata.*

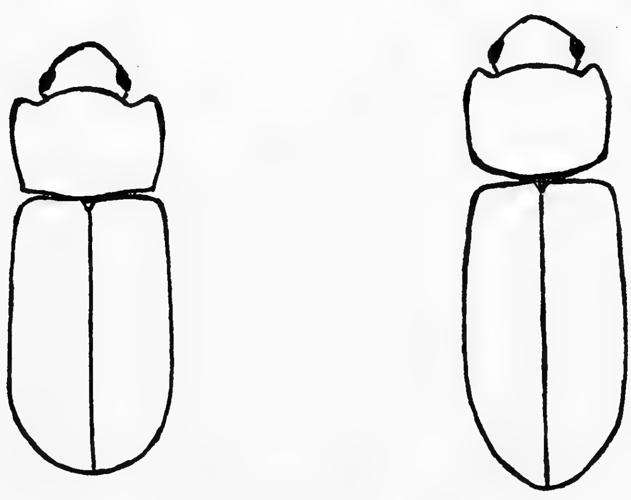

Figure 1 (a) *Cicones variegata* (b) *Cicones undata.*

*c/o The Museum, High Street, Ipswich, IP1 3QH
**8 Kingsdown Road, Epsom, KT17 3PU.

Although these differences are largely comparative it is easy, in practice, to separate the two species, even with the naked eye. Both *C. undata* and *variegata* are of the same general size but the former is more variable in this respect ranging from 2.2-3.5 mm in the series of 23 specimens examined. Since the provisional notice of the original discovery (Mendel & Owen, 1984) *C. undata* has been found on many occasions at the original site, by the authors and other coleopterists and, on 16th August 1986, was still quite plentiful there under flakes of bark on dead and dying sycamores. It has, to date, been recorded in the months of February, April, May, July, August, November and December. Large numbers were found on 30th August 1984, including teneral specimens, and it seems likely that adults are long-lived and survive the winter. They will probably, eventually, be found in every month of the year.

*C. undata* is not only associated with standing timber. The only examples found away from the original area were taken by one of us, in company with *Synchita separanda* (Reitter), under the bark of a sycamore log at the southern end of Queen Anne's Ride about 2km. from the original site.

*C. variegata* is normally associated with encrustations of the fungus *Ustulina deusta* (Fr.) Petrak on dead beech, *Fagus sylvatica* L. and is well known, though rare, at Windsor. If *C. undata* is confined to sycamore, a species thought to have been introduced by the Romans (Mitchell, 1974), it can hardly be an ancient forest relict in Britain. It would seem, however, to be an unlikely introduction. It may turn out to be associated with field maple, *Acer campestre* L., which has a very similar bark structure. There are a number of old field maple trees in Windsor Great Park. On the Continent *C. undata* is a rarity and has been found in France, Upper Silesia and Czechoslovakia (Vogt, 1967).

**Acknowldgements**

We thank Mr. R. D. Pope for confirming the identification of one of the original specimens and Mr. A. R. Wiseman (Deputy Ranger, Crown Estate) for permission to collect in the Windsor Forest area.

**References**

Joy, H. N., 1932. *A practical handbook of British beetles.* London.

Mendel, H. and Owen, J. A., 1984, A new *Cicones* (Colydiidae) from Windsor Great Park. *Coleopterist's Newsletter,* No. 16, p. 9.

Mitchell, A., 1974, *A field guide to the trees of Britain and Northern Europe.* Collins, London.

Vogt, H., 1967, Familie: Colydiidae. In Freude, H., Harde, K. W. and Lohse, G. A. (Eds.), 1967, *Die Kafer Mitteleuropas*, Band 7. Goecke & Evers, Krefeld.

NOTABLE COLEOPTERA AT PASHFORD POORS FEN, SUFFOLK. – Pashford Poors Fen, near Lakenheath, is one of those interesting pockets of wetland on the edge of the Breckland in north-west Suffolk. Even though spring fed it is drying out as a result of the drainage of adjacent arable land, and suffering from scrub encroachment. The area is a nature reserve (Suffolk Trust for Nature Conservation) and has been scheduled a Site of Special Scientific Interest.

The list of Coleoptera recorded from the fen grows steadily with each visit, and one small area of damp hollows, which is perhaps better described as grazing meadow than fen, is particularly rich. The following species which have been swept in that area are of special note.

*Agapanthia villosoviridescens* (Degeer) – 15.vi.1980 & 6.vii. 1980. Single examples, often in flight, are found regularly in Breckland and there is little doubt that this species has become more common since it was first discovered in Suffolk, at Mildenhall, in 1946 by G. Burton (*Trans. Suffolk Nat. Soc.,* **6**: 52-53). Large numbers, as were found at Pashford in 1980, are thought to result from local breeding and have only been recorded in recent years. Mr. J. W. Digby found the species in great numbers at Thelnetham Fen, on 17th. June 1978, and Mr. D. R. Nash found 'about a score' with little effort, on 25th. June 1983, at Barton Mills again in north-west Suffolk.

*Cryptocephalus exiguus* Schneider – 15.vi.1980. Now regarded as a great rarity and only previously taken in Suffolk at Oulton Broad, by E. C. Bedwell in 1898 (Morley, C., 1899, *Coleoptera of Suffolk*. Keys, Plymouth), and at Mildenhall by Morley in 1899. Both these records refer to pairs of specimens taken *in cop.* and the Mildenhall specimens survive, in the Morley Collection, at Ipswich Museum. Only a single example was found at Pashford.

*Chrysolina fastuosa* (Scopoli) – 15.vi.1980, 6.vii.1980, 10.viii.1980 etc. An uncommon beetle in Suffolk found sparingly at Pashford on Common Hemp-nettle, *Galeopsis tetrahit* L. It is interesting that Mr. E. Milne-Redhead also found the species in Suffolk in 1980, again on *G. tetrahit*, at Sprat's Water Nature Reserve (S.T.N.C.), near Lowestoft, on 6th. July.

*Longitarsus brunneus* Duftschmid – 22.v.1981 (det. M. L. Cox) Early Suffolk records for this scarce fenland species are confused with those for *L. luridus* (Scopoli), so it is worth noting its presence at Pashford.

*Stenocarus umbrinus* (Gyllenhal) – 6.vii.1980. Usually associated with field edges or disturbed ground, rather than fenland, it is likely that the single example found at Pashford was a 'stray' from an adjacent cornfield, red with Poppies, *Papaver rhoeas* L., with which the species is associated.

*Ceutorhynchus angulosus* Boheman – 15.vi.1980. Since this was recorded 'new to Suffolk' (Mendel, H., 1983, *Trans. Suffolk Nat. Soc.,* **19**: 337-40) I have been informed that Dr. M. G. Morris also took a specimen at Pashford, on 18th. June 1969 (Morris, *in litt.*).

*Acalyptus carpini* (F.) – 10.viii.1980 & 22.v.1981. First recorded from Pashford Poors Fen, and Suffolk, on 10th August 1980 and shortly afterwards at the same site by Dr. R. C. Welch on 26th. August 1980 (Suffolk Biological Records Centre, unpublished ms.), this fenland species is associated with Sallows, *Salix* spp. *A. carpini* is well known from Wicken Fen, Cambridgeshire, and has been recorded from Great Fen, Lopham, just over the Suffolk border in Norfolk (Pope, R. D., 1968, *Trans. Suffolk Nat. Soc.,* **14**: 25-40).

I thank the Suffolk Trust for Nature Conservation for permission to collect at Pashford Poors Fen Nature Reserve, Dr. M. L. Cox for identifying *Longitarsus brunneus*, Drs. M. G. Morris and R. C. Welch, and Messrs. J. W. Digby, E. Milne-Redhead and D. R. Nash for allowing me to include their unpublished records. – H. MENDEL, The Museum, High Street, Ipswich, Suffolk IP1 3QH.

TWO ADDITIONAL SITES FOR EUDECTUS WHITEI SHARP (COL.: STAPHYLINIDAE) IN SCOTLAND. – The paucity of recorded sites for *E. whitei* in Britain prompts me to record somewhat belatedly that I took a single example from fine gravel among sparse vegetation on an exposed ridge on Sgurr Mhor, Wester Ross (1110m) about 100m below the summit in July 1982 and two examples on Ben Lawers, Perthshire (1214m) on the south side just below the summit in May 1984. These would appear to be respectively the most northerly and most southerly records for the species in Scotland though it is, of course, recorded from a few sites in the Pennines. J. A. OWEN 8 Kingsdown Road, Epsom, Surrey, KT17 3PU.

OTIORHYNCHUS PORCATUS (HERBST) (COL.: CURCULIONIDAE) IN LEICESTERSHIRE – Pitfall traps containing a 5 per cent solution of formalin have been operated in my garden in Leicester since 1979 starting each year on 1 April and ending on 31 October. All beetles trapped in 1979-84 have been identified by Dr. D. Goddard. Among them are 31 *Otiorhynchus porcatus*, distributed as follows: 1979 (2), 1980 (2), 1981 (4), 1982 (5), 1983 (14) and 1984 (4). This suggests an established population of a species which is new to Leicestershire. DENIS F. OWEN, 66 Scraptoft Lane, Leicester LE5 1HU.

# FURTHER NOTES ON VARIATION IN A NORTH DORSET COLONY OF THE MEADOW BROWN BUTTERFLY, *MANIOLA JURTINA* L.

By RUPERT D. G. BARRINGTON, B.Sc.*

In a previous article (*Ent. Rec.* **96**: 259-263) I discussed the remarkable numbers of aberrations of *M. jurtina* that have appeared in a meadowland colony near Shaftesbury, North Dorset, over the past few years. The following is a summary of the interesting specimens recorded since 1983. In this colony the emergence commences around the second week of June with a trickle of males. The numbers rise up to a peak on or about 13th July when the majority of specimens emerging are female. Numbers then decline leaving a long tail of mostly females lasting into the second week of August. The more sombrely coloured males do not vary in so striking a manner as the females, but both sexes exhibit all types of variation.

The first aberration of 1984 was a fresh male on 24th June in which the underside of the hindwings was darker than type, and more or less unicolorous. This was probably an extreme example of ab *postmultifidus* Lipscomb.The range of expression of this aberration is considerable. Breeding results, which I hope to publish shortly, suggest a multifactorial inheritance pattern, which has a considerable weakening effect. Extreme examples have occured in females in which the hindwings are almost unicolorous. Such forms have not been recorded in this colony, but two were noted by the late J. C. B. Craske on Gomshall Down in Surrey, and another extreme form, taken by R. E. Stockley, was beautifully illustrated by A. D. A. Russwurm in Howarth's *Butterflies of the British Isles* (pl. 20 fig. 11).

On 25the June, a male which appeared in flight to be one of the frequent bleached forms, turned out to be ab *subtus-albida* Silb. (figure 1) in which the fulvous colouration on the underside of the forewings is replaced by a dirty cream. The fulvous tint to the underside of the hindwings is also absent leaving them grey. The following day two fresh Male ab *postmultifidus* were easily netted as they fed on lesser knapweed, a plant usually in flower during the first two weeks of the flight period, on which the males and the few females present at this time congregate in numbers. Later on, the knapweed is superseded by creeping thistle and water dropwort as these plants reach full bloom.

I was next able to work the area on 12th July when, in oppres- - sive conditions with slight drizzle, I found a fresh and extreme female ab *postmultifidus* sitting low down in the grass. On the same day a female ab *subtus-albida* was netted (figure 2). This form is

*The Old College Arms, Stour Row, Shaftesbury, Dorset.

more often seen in the male. The only other major aberration of 1984 was a well marked ab *fracta* Zweiglt taken as it rested on the ground. Quite a number of females transitional to ab *postmultifidus* were noted, usually with the hindwing median band narrowed and the forwing fulvous reduced to some extent.

During 1985 I was able to work the area for the majority of the flight period and took the opportunity to carry out some population studies using the mark-release-recapture method: the butterfly numbers peaked on 13th July with around 8100 specimens. The total number in the colony over the whole of the 1985 flight season being about 13500. Considering that the population occupies an area of no more than a couple of acres, the concentration of butterflies per unit area is very high. Casual observations would suggest that all the hayfields in the local area support similar populations. These fields are unsprayed and unfertilised. 1985 was a productive year for aberrations – the first seen being a male on 24th June showing a small area of homoeosis on one hindwing. This consisted of the partial reproduction of the forewing apical spot and a little of the surrounding colouration. At the start of June we enjoyed a fine, sunny spell that was all too short, the weather from then on being the cool, wet conditions that so characterised that summer. When the weather was windy as well, as it often was, working for *jurtina* proved difficult. The butterflies did not feed on the flowers in anything like the expected numbers, sitting instead on the grass stems (the more it rained, the lower they sat!) and when disturbed were carried off by the wind to distant parts of the meadow. On 2nd July, a hot, sunny day, a freshly emerged male ab *sinis-anommata* Verity was captured (figure 3). On the same morning a male ab *decrescens* Leeds was netted. This form has reduced venation, although on this specimen only one hindwing was affected. The most striking forms of this aberration occur in the blues and fritillaries where the black markings join up down the wings where the veins are absent. This character is known to be inherited in the fly *Drosophila*, and there is no reason to suggest that this is not so in butterflies. The capture of an almost identical specimen, albeit a female, in the same area two years ago may support this suggestion.

On the 4th of July I noticed a black male ab *antinigromargopostatrescens* Leeds feeding from water dropwort. This was successfully captured (figure 4) and proved to be similar to a female taken at almost exactly the same spot in 1983 (figured in *Ent. Rec.* **96**: 261). On 8th July a second male of this form was noted and the same evening, amongst several females resting on the thistle heads, was a dark, male ab *postmultifidus*.

The 10th of July saw the first of 3 good ab *fracta* Zweiglt (figure 5). The first specimen, found feeding on lesser knapweed, also had a shiny upper surface (ab *glabrata* Leeds) – probably a

scale defect. 12th July was a reasonable day and a female from thistles that was transitional to *postmultifidus* on the underside was an extreme *antiaurolancea* Leeds on the upperside – the forewing fulvous being greatly reduced (figure 6). On 13th July I spent some time looking over the thistle heads, and was rewarded with a female specimen showing extreme homoeosis on one hindwing (figure 7). The homoeosis consists of a large area of orange splashes and streaks on the normal pattern of the left hindwing. This fine aberration is less striking when figured in monochrome. During the afternoon my friend, John Simner came to spend a couple of hours in the field and was rewarded with, remarkably, another fine male *postatrescens*, in reasonable condition. By this date, the colony was at full strength and *jurtina* was in greater profusion than I have ever known. One other interesting aberration taken the same evening was a male *anticastanea* Leeds netted as I was leaving the fields. In this aberration, the fulvous of the forewings is darkened to a red-brown. This is very apparent on the underside, and the upperside fulvous circle that surrounds the apical spot was also dark in colour. Although this is only a minor change in the upperside colour pattern it does make the apical spot very much less obvious. In all probability this spot acts as a focus to divert the attention of predatory birds from the boby of the insect, and the fulvous ring may serve to accentuate this function.

From 14th to 20th July, only minor varieties were noted, including several female ab *addenda* Mosley (one or two extra black spots below the apical spot of the forewing). Several ab *hueni* Krul were also noted – in this form the fulvous of the upperside of the forewings is replaced by light brown, and the whole ground colour is of a paler greyish-brown colour. On the underside of the forewings the fulvous is covered by a light brown suffusion. On the 20th July one of several females on a thistle head had a black suffusion over the hindwings, being transitional to ab *postatrescens* (figure 8), whilst another seen the same day was ab *transformis* Leeds. In this form the upperside colour is paler than normal with the fulvous replaced by cream. On the underside of this specimen the whole pattern is a creamy colour. The final insects of note were taken on 24th July, and included a well-marked female ab *addenda* and a female ab *antiultrafulvescens* Leeds in which the fulvous of the underside of the forewings is very dark-red, and the remainder of the underside is considerably darker than type.

Of particular interest was the number of bleached forms (ab *partimtransformis* Leeds) that occurred during 1985 – many more than in previous years. Many theories have been advanced to explain the production of bleached insects, with causal factors suggested including humidity, temperature, sudden light and developmental damage. These are somewhat vague, and in all probability there is

a genetic influence on the developing scales. I have noticed that the bleached areas of the wing tend to be especially weak – usually the first area to become chipped or torn. The scale defects on a bleached male are shown on the scanning electron micrograph, (figure 9.) A further interesting observation was the occurance of a melanic specimen in 1983 followed by five specimens (4 male, 1 female) in 1985. Melanics are very rare, so the appearance of six in three years strongly suggests a genetic influence. The late C. G. Lipscomb bred from a melanic female, obtaining a normal F1 generation but only type females and no males in F2. Melanic forms are often deformed to a greater or lesser extent, and the available evidence would suggest that melanism in *jurtina*, rather than being the simple recessive or dominant encountered in some other Lepidoptera, is a complex, multifactorial condition, which may be sex-linked and is obviously lethal in some combinations. A more thorough breeding programme is required to resolve this problem.

It is well known that butterfly specimens are occasionally encountered with the mark of a bird beak across the wings, but there are few reports of actual observations of birds capturing butterflies. In this colony, in 1985, I observed on several occasions, swallows swooping low over the fields, and taking adult jurtina from thistle heads where the butterflies were feeding. At times 8 to 10 swallows were working the fields and, over the whole flight period, must have accounted for a substantial number of butterflies.

An example of double mating was probably seen in 1985. On 16th July I observed a female, previously marked on 8th July, in cop. The specimen must have been at least 8 days old, and it is unlikely that this was the first mating. When sperm is passed from male to female an additional substance, the Receptivity Inhibiting Substance (RIS) is also transferred. This substance supresses both 'calling' and the adoption of courtship postures by the female. Studies by Ford and Eltringham on the pearl-bordered fritillary suggest that visual factors are predominant in attracting males to females, the pheromones only acting over a very short range. Perhaps second matings occur when the supply of RIS is exhausted?

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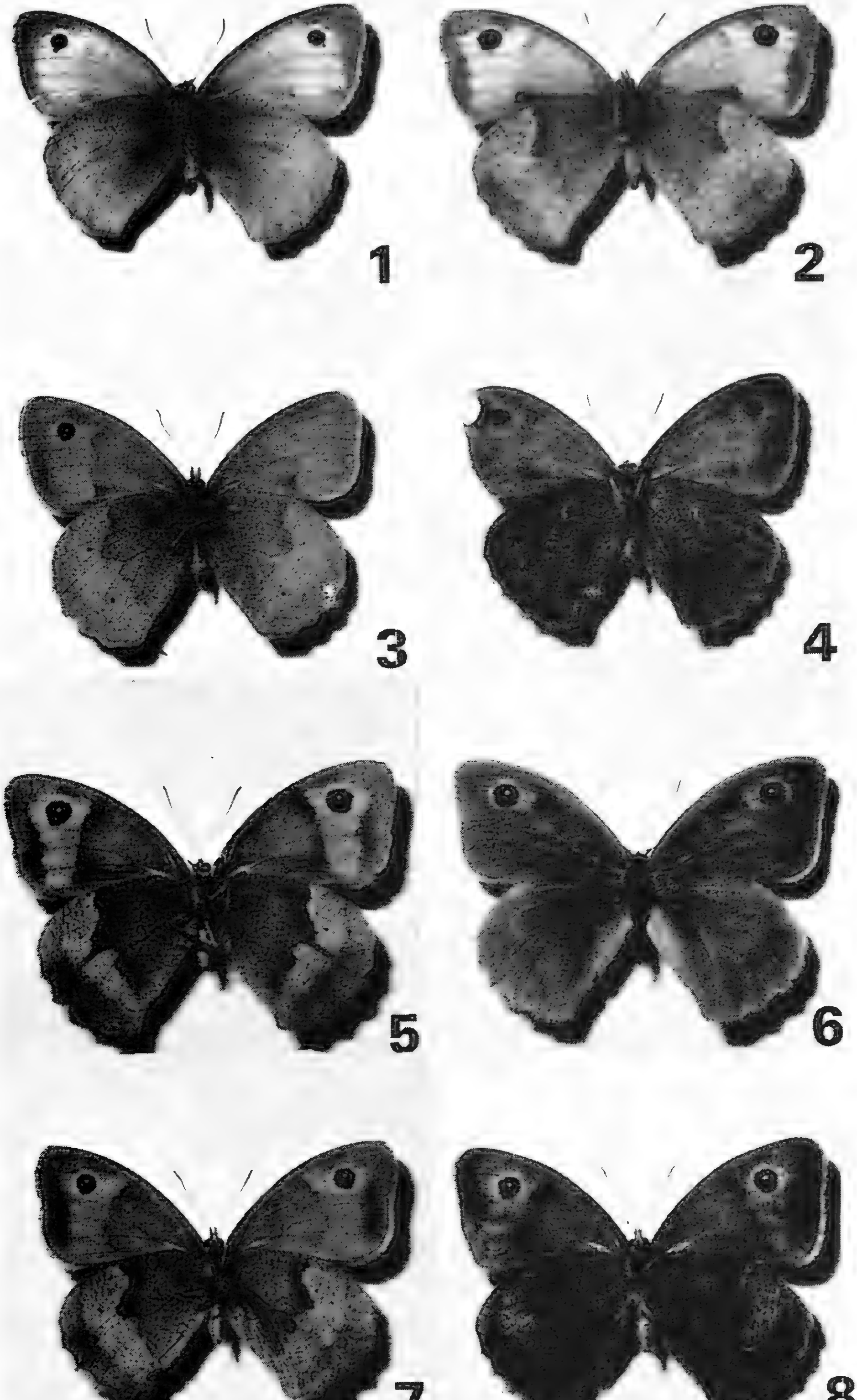
KEY TO FIGURES

Fig. 1 ab *subtus-albida* Silb. male 25.6.1984; fig. 2 female 12.7.1984; fig. 3 ab *sinis-anommata* Vty. male. 2.7.1985; fig.4 ab *antinigromargo-postatrescens* Leeds male. 4.7.1985; fig.5 ab *fracta* Zweight. female. 20.7.1985; fig.6 ab *antiaurolancea* Leeds female. 12.7.1985; fig.7 homeosis. female. 13.7.1985; fig. 8 transition to ab *postatrescens*. female. 20.7.1985.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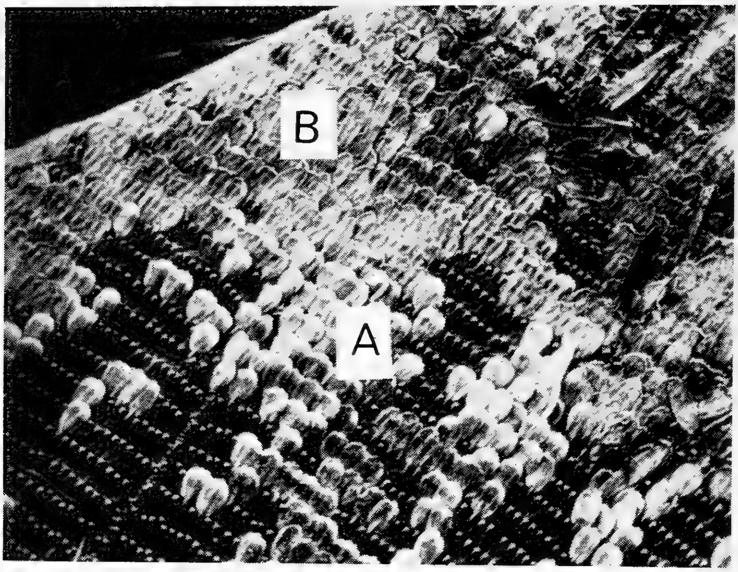


Figure 9 area of right forewing of ab *partimtransformis* Leeds A: area of normal scales B: area of deformed, bleached scales Note: some scales have been removed from this specimen. Scale loss is *not* a feature of this aberration. (Scanning microscope x 60).

**Acknowledgement**

I would like to express my thanks to R. M. Craske for his help in supplying much information on aberrations of *Maniola jurtina.*

**References**

Ford, E. B. *Butterflies* Collins 1945.

Ford, E. B. *Ecological Genetics* Chapman and Hall, 1975.

Lipscomb, Maj. Gen. C. G. *Maniola jurtina* L. a breeding experiment *Entomologist's Rec. J. Var.* **83**:333.

Russwurm, A. D. A. *Aberrations of British Butterflies* Classey, 1978.

Howarth, T. G. *Colour Identification Guide to Butterflies of the British Isles Viking 1984.*

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PYRGUS MALVAE L. (GRIZZLED SKIPPER) IN MID-JULY — I was interested in the note from Mr. A. A. Allen (*Ent. Rec.* **98**: 61) in which he reports seeing the above species in W. Norfolk on 14 July 1985. On 16 July this year, in Tugley Wood, Surrey. I also saw a single individual of this species. Likewise, it was in perfect condition. — S. L. MEREDITH — 5 Rutlish Road, Merton Park, London SW19 3AL.

# DIFFERENTIAL HABITAT SELECTION IN THE LEPIDOPTERA: A NOTE ON DECIDUOUS VERSUS CONIFEROUS WOODLAND HABITATS

By Dr. P. W. E. KEARNS and Dr. M. E. N. MAJERUS*

In July 1984, a short excursion was made to north and mid-Wales. The main purpose was to collect samples of the grass *Agrostis tenuis* from disused copper mine tips, and to look for ladybirds. But a couple of Heath moth traps were taken, for use if suitable sites were found. The two traps were set up on South Stack Heath, Anglesey (SH 217 802; SH 218 802) on the night of July 11th. It was a windy night and the catch was disappointingly low in both traps; there was nothing unexpected and only 44 moths of 8 species were recorded. The visit to Anglesey was disappointing for other reasons. We had hoped to sample graylings (*Hipparchia semele*) from the Great Orme's Head site where dwarf forms are supposed to occur (Ford, 1957), but none were found in the cloudy conditions. Ladybirds were also scarce, and a long search of a coniferous plantation (Newborough Forest, SH 403 648) resulted in only a few adults. In addition, the copper mine tip at Parys Mountain (SH 904 445) was found to be almost totally denuded of *A. tenuis* probably as a result of previous sampling excursions by university lecturers and researchers.

Consequently, we moved south to Drws-Y-Coed where plentiful supplies of *A. tenuis* were found on a disused mine tip (SH 544 533). During the day ladybirds were sought at several sites, but they were still scarce, though reasonable numbers of *Aphidecta obliterata* and *Adalia decempunctata* were found in Ystwyth Forest (SN 661 729).

On the night of the 12th., the moth traps were set up 20 yards apart, on either side of a lane near Ynys-Hir, Dyfed (SN 686 947). This lane divided a conifer plantation from an area of mixed deciduous woodland. The conifer in question was douglar fir, and there was very little ground vegetation, though there was some ivy on the trees close to the trap. On the other hand, the deciduous wood was extremely heterogeneous, containing hazel, sycamore, birch, field maple, oak, elm and hornbeam; and there was a rich ground vegetation with bramble, bracken and honeysuckle being most dominant, together with many other species of broad-leaved plants and grasses. The subsequent catches in the two traps following the positioning of one amongst the conifers the other amongst the deciduous trees has enabled an interesting comparison to be made of the effect of these two different, but almost adjacent habitats.

*Department of Genetics, Downing Street, Cambridge.

The total catches are given in table 1. It is perhaps not unexpected that trap 1, which was sited in the deciduous woodland produced nearly twice as many species as trap 2.

Thirteen species were found in both traps. Only 7 species of moths taken in trap 2 were absent from trap 1. Of these, the commonest, the barred red (*Hylaea fasciaria* L.) is of course, associated with coniferous woodlands, as the larvae feed on scots pine and a range of other conifers. Similarly, the larvae of the grey pine carpet (*Thera obeliscata* Hb.) feeds on scots pine. The occurrence of the other five species taken in trap 2 but not in trap 1 is of less significance as only 1 individual of each was recorded. Certainly, there is no obvious association between conifers and any of these species.

Of the 23 species taken in trap 1 but absent from trap 2, none has a particular association with conifers; the larvae of all the species feed on deciduous trees or a range of low growing herbaceous plants and grasses. One or two species were of particular note to us. It was a pleasure to see both the scarce silver-Y (*Syngrapha interrogationis* L.) and the beautiful snout (*Hypena crassalis* Fab.), as these do not occur in East Anglia. The satin lutestring (*Tetheella fluctuosa* Hb.) was also of interest, for although we have seen this before in Staffordshire, these three specimens were the first non-melanics we have seen. It is of note, but quite expected, that all the peppered moths (*Biston betularia* L.) taken were of the typical nominate form.

On the whole this catch tended to make the trip rather more worth while than it had been hitherto, and the sharpness of the distributions of some of the species to their preferred habitats surprised us. But undoubtedly, the most interesting feature of the whole trip concerned the two commonest species of moth that we took.

Almost a hundred individuals of the mottled beauty (*Alcis repandata* L.) were recorded; 41 in trap 1 and 58 in trap 2. The majority were of the nominate form, however, 11 were of the banded form f. *conversaria* Hb., and two of a melanic form either f. *nigricata* Fuchs or f. *nigra* Tutt; the former according to Kettlewell (1973) being a non-industrial melanic and the latter an industrial melanic. The amazing thing was that all the darker forms were taken in trap 2. Kettlewell has suggested that f. *nigricata* exists in a polymorphism with the typical form in the Black Wood of Rannoch, Perthshire, a relict Caledonian pine forest. Although it is more conspicuous when it rests on pine trunks, it is less so when it has to take to the wing during the day in the rather poor light under the pine canopy. The light conditions in the deciduous wood were certainly much brighter than under the conifers, and so Kettlewell's contention might have a bearing on the distribution of the dark forms we found.

| Species | Trap 1 | Trap 2 |
|---|---|---|
| *Alcis repandata* Linn. | 41 | 58 |
| *Semiothisa liturata* Cl. | 8 | 26 |
| *Polia nebulosa* Hufn. | 8 | 7 |
| *Idaea aversata* Linn | 7 | 2 |
| *Diarsia brunnea* D.& S. | 3 | 2 |
| *Polia hepatica* Cl. | 2 | 2 |
| *Nudaria mundana* Linn. | 1 | 1 |
| *Spilosoma luteum* Hufn. | 1 | 2 |
| *Apamea remissa* Hb. | 1 | 1 |
| *Campaea margaritata* Linn. | 1 | 3 |
| *Noctua pronuba* Linn. | 1 | 1 |
| *Lacanobia oleracea* Linn. | 1 | 1 |
| *Mesapamea secalis* Linn. | 1 | 1 |
| *Diarsia mendica* Fabr. | 4 | |
| *Tetheella fluctuosa* Hb. | 3 | |
| *Biston betularia* Linn. | 2 | |
| *Eulithis populata* Linn. | 2 | |
| *Herminia tarsipennalis* Treit | 2 | |
| *Cerapteryx graminis* Linn. | 2 | |
| *Geometra papilionaria* Linn. | 1 | |
| *Ecliptopera silaceata* D.& S. | 1 | |
| *Lomographa bimaculata* Fabr. | 1 | |
| *Apeira syringaria* Linn. | 1 | |
| *Ectropis bistorata* Goeze. | 1 | |
| *Ectropis crepuscularia* D.& S. | 1 | |
| *Scotopteryx murcronata* Heyd. | 1 | |
| *Habrosyne pyritoides* Hufn. | 1 | |
| *Ptilodon capucina* Linn. | 1 | |
| *Hypena crassalis* Fabr. | 1 | |
| *Syngrapha interrogationis* Linn. | 1 | |
| *Xestia triangulum* Hufn. | 1 | |
| *Hoplodrina blanda* D.& S. | 1 | |
| *Rusina ferruginea* Esp. | 1 | |
| *Apamea crenata* Hufn. | 1 | |
| *Euplexia lucipara* Linn. | 1 | |
| *Caradrina morpheus* Hufn. | 1 | |
| *Hylaea fasciaria* Linn. | | 9 |
| *Thera obeliscata* Hb. | | 2 |
| *Mesoleuca albicillata* Linn. | | 1 |
| *Eupithecia vulgata* Haw. | | 1 |
| *Phalera bucephala* Linn. | | 1 |
| *Mythimna ferrago* Fabr. | | 1 |
| *Xestia ditrapezium* D.& S. | | 1 |

Table 1 A comparison of species taken in two Heath traps on the night 12/13 July. The traps were situated 20 metres apart, trap 1 in deciduous woodland and trap 2 in a conifer plantation.

Yet it suggests that the *conversaria* and *nigricata* forms have a very strong habitat preference for the conifer area or alternatively an aversion to the lighter conditions of the deciduous wood.

The situation with respect to the tawny-barred angle (*Semiothisa liturata* Clerck) was even more spectacular. Not surprisingly, the majority of the specimens of this pine feeding species were taken in the conifer wood, 36 compared with 9 in the deciduous wood. Of those taken, 21 were of the melanic form *nigrofulvata* Collins. All except one of these melanics were taken in trap 2, that is to say, the conifer trap. That the melanic form should comprise 53.33% in the conifer plantation and only 11.1% in the decifuous wood suggests to us that the forms of this species also have some method for distinguishing between their habitats or surroundings.

It is known that the different forms of some species of moth select fairly specific backgrounds to rest on (see Sargent, 1969; Kettlewell, 1973; Boardman, Askew and Cook, 1974; Majerus,

1982). From our brief observations it seems that the different forms can also distinguish between the conditions surrounding them in some way. The range of differences between the catches in two traps set so close together, but in such different environments, calls for other similar sites to be found and more extensive research to be done.

**Acknowledgements**

We are grateful to John Spencer of the Department of Genetics, Cambridge, for acting as a driver, and his general assistance during the trip.

We are also indebted to the R.S.P.B. wardens for the South Stack and Ynys-Hir reserves for their advice.

**References**

Boardman, M., Askew, R. R. and Cook, L. M. (1974) Experiments on resting site selection by nocturnal moths. *J. Zool. Lond.*, **172**: 343-355.

Ford, E. B. (1957) *Butterflies* (3rd. edition). Collins. London.

Kettlewell, H. B. D. (1973) *The evolution of melanism.* Clarendon. Oxford.

Majerus, M. E. N. (1982) Genetic control of two melanic forms of *Panolis flammea* (Lepidoptera: Noctuidae). *Heredity*, **49**: 171-177.

Sargent, T. D. (1969) Background selections of pale and melanic forms of the cryptic moth, *Phigalia titea. Nature, Lond.* **222**: 585-586.

Stewart, R. C. (1977) Further experiments on resting site selection by the typical and melanic forms of the moth *Allophyes oxyacanthae* (Caradrinae). *J. Zool. Lond.*, **181**: 395-406.

EUPROCTIS CHRYSORRHOEA L. (BROWN-TAIL MOTH) IN NORTH HAMPSHIRE – Further to T. G. Winter's note (*Ent. Rec.* **98**: 209) an m.v. light operated at Kemsholt (SU 605495) attracted brown-tail moths as follows: 16.vii.1983 (2); 7.vii.1984 (1); 11.vii.1984 (1) and 14.vii.1985 (1). Also in V.C. 12, at North Warnborough (SU 728536) 2 were recorded on 17.vii.1983. All dates refer to the morning of inspection, and all moths were males. During the 3 years of operating an m.v. at Kempsholt, *chrysorrhoea* was recoded in each year, suggesting that it is established locally. J. W. FRADGLEY, The White House, Merley Park Road, Ashington, Wimborne, Dorset.

# *CONOCEPHALUS DISCOLOR* (THUNB.) (ORTHOPTERA) NEW TO WILTSHIRE AND OTHER NOTES ON BRITISH ORTHOPTERA IN 1985

By JOHN PAUL*

On 12 October 1985, c.11.00 hours, I found two stridulating male *Conocephalus discolor* (Thunb.) amongst long grass in an unremarkable field on the edge of Landford Common, South Wiltshire (SU 261180). Landford Common is continuous with the northern boundary of the New Forest. This appears to constitute the first record of this bush-cricket from Wiltshire. Furthermore, this is the first record of this species from an inland county; previous records being from Dorset, Hampshire, Wight, East and West Sussex. It is clear that *C. discolor* is undergoing an expansion in its range of distribution. Haes (1984) documents its recent discovery and spread within the New Forest. The New Forest is possibly the area best worked and known by Orthopterists in Britain (Ragge, 1965; Brown & Searle, 1974), yet the first New Forest record of *C. discolor* was made as recently as 1977 (Haes, 1984). Since then, scores of new sites have been reported within the Forest. In the late summer of 1985 this bushcricket was found to be one of the more conspicuous and widespread of the New Forest Orthoptera. My records are:—

East End (SZ 366982). 28.xi.85. On bog myrtle. Others: *Tetrix undulata.*

Keyhaven Marshes (SZ 317923). 28.xi.85. In tall grass. Others: *C. dorsalis, Chorthippus albomarginatus, Ectobius panzeri.*

Oberwater (SU 268028). 28.xi.85. On bog myrtle and ling. Others: *Metrioptera brachyptera.*

Oberwater (SU 265026). 28.xi.85. In quaking bog on long grass. Others: *Stethophyma grossum, M. brachyptera.*

Ibsley Common (SU 168102). 28.xi.85. On bog myrtle and ling. Others: *Omocestus rufipes, Ch. brunneus, Ch. parallelus, Myrmeleotettix maculatus, M. brachyptera.*

Nomansland (SU 263175). 12.x.85. On bog myrtle. Others: *S. grossum.*

Also on 12.x.85, I found *C. discolor* at Sinah Common, Hayling Island (SZ 703991) on gorse in association with *Platycleis albopunctata* and by Swanbourne Lake, West Sussex (TQ 017080) on rough chalk grassland amongst a colony of *Gomphocerippus rufus.* Thus, *C. discolor,* which was regarded as a great rarify in Britain only a few years ago, can now be found with ease over a vast diversity of

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habitats. All of these 1985 *C. discolor* were of the usual green form and none was hypermacropterous. By contrast, in 1984 I found many brown and/or hypermacropterous specimens in South Hampshire. Hypermacropterism seems to be a feature of an expanding population, as appears to have been the case during the hot summers of 1982-4 when *C. discolor* was seen to spread to many new sites, many specimens being hypermacropterous. Perhaps the cool, damp weather of 1985 inhabited the development of hypermacropterous forms in some way.

The common green grasshopper, *Omocestus viridulus* sometimes occurs as a beautiful variation, termed 'var. purple' by Ragge (1965), in which the usual green colour is replaced on the sides of the thorax and abdomen by a pinkish purple. There is a purple medial stripe on the dorsal surface of the pronotum. Var. purple has been recorded only amongst females of *O. viridulus.* This colour form is sufficiently distinctive and scarce to warrant special mention by Lucas (1920). I collected two specimens of var. purple in 1985: Exmoor, Somerset 6.vii.85 and Penkridge Bank, Staffs., 10.viii.85. One wonders if a combination of heathland habitat and cool, damp weather favours the generation of this colour form: these are the only two I have seen.

On 11.x.85 I collected a female scaly cricket, *Mogoplistes squamiger,* from Chesil Beach, Dorset and observed her in captivity for several weeks. She was discovered at dusk amongst stones at the head of the Fleet. This is the only known British locality for what is otherwise an insect of the Canary Islands and Mediterranean coast. Very little is known of its life history and habits. In life, *M. squamiger* is attractive and rather more cricket-like than the shrunken museum specimens would suggest. The ovipositor is a dull orange with a black tip. In captivity, the cricket was noted to be nocturnal in appearance, hiding under stones during the day. Sometimes she was observed climbing amongst sprigs of vegetation at night. She fed readily on damp bread, diluted honey and a dead fly. After death eight eggs were located; some thrust vertically into sand, some lying-flat on the sand, others wedged against the side of the jar. When seen under the light microscope at a magnification of x50, no obvious surface feature was discerned. These ova are of a uniform dull yellow, c. 1mm by 3mm. They are being kept under observation.

Good weather in September and October ensured that many Orthoptera were active late into the season. For example, at Spurn Head, Britain's most northern locality for *C. dorsalis*, a stridulating male was found as late as 20 October. My last Midland record was that of a colony of *Ch. brunneus* at Chasewater, West Mids., 24.x.85. In southern England some hardy Orthoptera were found well into November despite the onset of hard frosts in that month. My

November records for 1985 are as follows: Black Rock Gully, Avon Gorge, Bristol, 2.xi.85, *P. griseoaptera,* many stridulating males. Brean Down, Somerset, 10.xi.85, *P. albopunctata*, one stridulating male; abundant and active *Ch. brunneus; Ch. parallelus*, one stridulating male. Brent Knoll, Somerset, 10.xi.85, *Ch. brunneus*, 2 ♂♂; *G. rufus,* 1 ♂ 6 ♀♀, confined to an area recently cleared of brambles. Westhay Moor, Somerset, 10.xi.85, *P. griseoaptera,* one stridulating male. Black Rock Gully, 11.xi.85, *P. griseoaptera,* several stridulating males; *Ch. brunneus,* two stridulating males. Brown's Folly, near Bath, 12.xi.85, *Ch. brunneus*, one stridulating male; *Ch. parallelus*, one stridulating male, one female; *P. griseoaptera*, 1 ♀. Chapman's Pool, Dorset 13.xi.85, a temperature of -8°C being recorded at Hurn Airport the night before, *P. griseoaptera, Ch. brunneus* (including one female var. green), *Ch. parallelus, P. albopunctata*, all four species being common, active and stridulating. Black Rock Gully, 15.xi.85, *P. griseoaptera*, one stridulating male; *Ch. brunneus*, one stridulating male. Rooksmoor, Glos., 15.xi.85, there having been a light snowfall at this site on 9.xi.85, followed by several hard frosts, *G. rufus*, 1 ♀, moderately active.

Thus, despite exceptionally cold, wet weather early in the year, 1985 yielded a good many Orthoptera records later in the season. One wonders if *C. discolor* will continue to spread further inland.

In my room I have seven Wood crickets, *Nemobius sylvestris*, taken as nymphs in October. They have matured rapidly in captivity to become stridulating adults by early February 1986. Interstingly all seven matured into males.

## References

Haes, E. C. M. (1984). An apparent expansion of the known range of *Conocephalus discolor* (Thunberg) (Orthoptera: Tettigoniidae) into the New Forest and heathlands of east Dorest.' *Entomologist's Gaz.* **35**: 64-65.

Ragge, D. R. (1965). *Grasshoppers, crickets and cockroaches of the British Isles.* London.

Brown, A. J. & Searle, C. A. (1974). A survey of the Orthoptera of the New Forest. *Entomologist's Gaz.* **25**: 285-292.

Lucas, R. J., (1920). *A monograph of the British Orthoptera.* Ray Society.

UNUSUAL BEHAVIOUR OF THE ANT LASIUS ALIENUS (FORST.) In a previous note (Robbins, *Ent. Rec.* **93**: 42) I reported the occurrence of *Lasius fuliginosus* (latr.) in a first-floor flat. In Sept. 1986 *L. alienus* also occurred indoors, though this time in a bedroom on the South side of the building. The insects had travelled up inside

the cavity wall and were emerging indoors through a crack in the plaster by the window-sill. Several alates, accompanied by workers, were found. Further emergence was discouraged, but nonetheless on subsequent days a further 3 or 4 alates and a few workers were noted. I have mislaid my notes made at the time, but I think that Sept 25th was the date on which the insects were first observed, whilst the final observation was of a couple of workers seen four days later. Incidentally, this is the first indication I have had of the occurrence of *L. alienus* in this part of Warwickshire. – J. ROBBINS, 123b Parkgate Road, Coventry, CV6 4GF.

HYGROPORA CUNCTANS (ERICHSON) (COL.: STAPHYLINIDAE) IN INVERNESS-SHIRE. – On a visit to a site near Lock Vaa with my friend Mr. Richards Lyszkowski on 22.vi.86, I collected a number of beetles by treading moss at the edge of a pond, among which were a male and female of *H. cunctans.*

This very local species was first taken in Britain at Brockenhurst in 1914 (Walker 1914 *Entomologist's Mon. Mag.* **50**, 194), and subsequently at Shell Bay near Studland (Harwood cited by Donisthorpe, 1929 *ibid.* **65** 239), The Lizard, Cornwall (Bannister 1936 *ibid* **72** 78) and at Slapton Ley (Allen 1944 *ibid.* **80** 24). A record from Kent (Williams 1970 *ibid.* **106** 21) turns out to have been based on a misidentification and the author has asked if I would set the record straight by including notice of this. I can find no other published record for this species in Britain but my friend Mr. A. A. Allen tells me that the late P. Harwood took the species (probably during the 1940's) at Kinrara on Speyside – a site only 10 km from where I found my specimens – but apparently did not published his find.

While my find does not, as I first thought, constitute the first Scottish record for this species, it serves to confirm the presence of this beetle in a locality considerably distant from its hitherto recognised haunts on the south coast. In a wider context, however, its presence in Scotland is perhaps not surprising for it occurs throughout Scandinavia (Silverberg 1979 *Enumeratio Coleopterorm Fennoscandiae et Daniae*). In northern Scandinavia, another member of the genus, *H. longicornis* Palm, is also present. The means of distinguishing the two species is given in Palm (1972 *Svenk Insektfauna* 9 pt 7.)

I thank Mr. A. A. Allen for confirming the identity of my specimens and telling me of the earlier Scottish record, Dr. M. Shaw for checking for me the Scottish Insect Index maintained at the Royal Museum of Scotland and Mr. P. M. Hammond for one of the references cited. J. A. OWEN 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

# LEPIDOPTERA OF ABERDEENSHIRE AND KINCARDINESHIRE

By R. M. PALMER* and M. R. YOUNG**

## 5th Appendix

The species listed below represent additions to the list of Lepidoptera for Vice-counties 91-93 since the publication of the previous appendix (*Ent. Rec.* **96**: 162-164). Of the 53 species in the main section 38 are completely new records and the remaining 15 are rediscovered species, which were mentioned previously in literature published between 1878 and 1907. Unless otherwise indicated the records are those of the authors and relate to the period 1983-85. We take this opportunity to thank the following entomologists who have provided records as indicated in the list: K. P. Bland, P. Brown, M. W. Harper, R. Knill-Jones, J. R. Langmaid, P. Marren, A. Payne, E. C. Pelham-Clinton and M. Townsend.

As in previous appendices the main list is followed by a supplementary list containing records of species which are new to one or more of the Vice-counties 91-93.

## References


Cruttwell, C. T. 1907. *Entomologist's mon. Mag.* **43**: 256-7.

Palmer, R. M., Pelham-Clinton, E. C. & Young, M. R. 1984. *Entomologist's Rec. J. Var.* **96**: 41-2.

Reid, W. 1892. *List of the Lepidoptera of Aberdeenshire and Kincardineshire.*

Trail, J. W. H. 1878. *Trans. Nat. Hist. Soc. Aberdeen,* **1878**: 28-42.

Young, M. R. 1984. *Entomologist's Rec. J. Var.* **96**: 95.


### (1) NEW OR REDISCOVERED SPECIES

| | |
|---|---|
| *Eriocrania haworthi* Bradl. | Common among birch (Reid 1892); 92 Muir of Dinnet NNR.. |
| *Ectoedemia albifasciella* Hein. | 92 Craigendarroch wood (JL, ECP-C). 93 Gight woods, mines on *Quercus*. |
| *Stigmella roborella* Johan. | 92 Ballater (JL, ECP-C). |


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| | |
|---|---|
| *S. basiguttella* Hein. | 92 Craigendarroch wood, mines on *Quercus.* |
| *Bucculatrix ulmella* Zell. | 92 Craigendarroch wood, imagines, late June, larvae common on *Quercus*, late August. |
| *Caloptilia robustella* Jackh. | 92 Craigendarroch wood (JL, ECP-C). |
| *C. leucapennella* Steph. | 92 Near Aberdeen (Reid 1892); Dinnet oak wood NNR (MWH). |
| *Callisto coffeella* M.-R. | 92 Glen Callater, one, 1983 (*Ent. Rec.* **96**: 41-42). |
| *Phyllonorycter harrisella* L. | 92 Near Monymusk and Craigendarroch wood. |
| *P. spinicolella* Zell. | 93 Gight woods, bred from mines on *Prunus spinosa.* |
| *P. quinqueguttella* Stt. | 92 Foveran, bred from mines on *Salix repens.* |
| *Argyresthia glabratella* Zell. | 92 Muir of Dinnet NNR (JL, ECP-C). |
| *A. glaucinella* Zell. | 93 Gight wood, bred from larvae in bark of *Quercus* (RK-J, MRY). |
| *Rhigognostis incarnatella* Steud. | 92 Muir of Dinnet NNR. |
| *Coleophora milvipennis* Zell. | 92 Muir of Dinnet NNR (JL, ECP-C). |
| *C. albitarsella* Zell. | 91 St. Cyrus NNR, bred from cases on *Origanum* (MWH, MRY). |
| *C. lithargyrinella* Zell. | 93 Gight woods, cases on *Stellaria holostea* (RK-J, MRY). |
| *C. genistae* Stt. | 92 Muir of Dinnet NNR (KPB). |
| *C. peribenanderi* Toll. | 91 St. Cyrus NNR. |
| *Exaeretia ciniflonella* L & Z | 92 Crathie woods, one, 1985 (MWH). |
| *Agonopterix subpropinquella* Stt. | 91 St. Cyrus NNR, bred from larvae on *Cirsium vulgare.* |
| *Isophrictis striatella* D. & S. | 92 Hatton of Fintray, one, 1973. |
| *Teleiodes decorella* Haw. | 92 Dinnet oak wood NNR (MWH), Craigendarroch wood. |
| *Bryotropha umbrosella* Zell. | 92 Balmedie. |
| *Lita solutella* Zell. | 92 Braemar (Cruttwell 1907); Morrone Hill NNR (RK-J). |
| *Gelechia sororculella* Hb. | 92 Muir of Dinnet NNR. |
| *Scobiapalpa obsoletella* FvR | 92 Kingswells, one, 1974 (det, ECP-C). |
| *Batrachedra praeangusta* Haw. | 92 Muir of Dinnet NNR. |
| *Mompha propinquella* Stt. | 92 Inverurie. |

| | |
|---|---|
| *Acleris literana* L. | 92 Near Monymusk, bred from pupa on *Quercus.* |
| *Ancylis mitterbacheriana* D. & S. | 92 Upper Deeside (Trail 1878); Craigendarroch wood. |
| *A. laetana* F. | 92 Muir of Dinnet NNR, bred from larvae on *Populus tremula.* |
| *Epinotia nisella* f. *cinereana* Haw. | 92 Braemar (Trail 1878); Muir of Dinnet NNR. |
| *E. caprana* F. | 92 Rare, Braemar, Inverurie (Reid 1892); near Crathie, bred from larvae on *Myrica gale.* |
| *Rhyacionia duplana logaea* Durr. | 92 Scotston Moor (Trail 1878); Glentanar, 1985. |
| *Pammene splendidulana* Guen. | 92 Braemar, Kemnay (Reid 1892); nr. Monymusk. |
| *P. fasciana* L. | 92 Craigendarroch wood, one, 1984 (ECP-C); believed to be the first record from Scotland. |
| *Cydia lunulana* D. & S. | 92 near Crathie. |
| *Donacaula mucronella* D. & S. | 92 Muir of Dinnet NNR. |
| *Rhodometra sacraria* L. | 92 Kirkhill forest, one at light Oct 85 (MT). |
| *Euchoeca nebulata* Scop. | 92 Kirkhill forest, one, 1985 (MT). |
| *Lomaspilis marginata* L. | 91 Near Stonehaven (Trail 1878).<br>92 Kirkhill forest, one, 1985 (MT). |
| *Lycia lapponaria* Bois. | 92 near Crathie, one female and larvae on *Myrica gale* (AP, MRY). |
| *Alcis jubata* Thunb. | 92 Kirkhill forest (MT); Muir of Dinnet NNR and near Monymusk.<br>93 Oldmeldrum. |
| *Manduca rustica* F. | 92 Aberdeen, one, 1983 (*Ent. Rec.* **96**: 95). |
| *Deilephila elpenor* L. | 92 Aberdeen, one (Trail 1878); one male, 1983.<br>93 Haddo House, larvae on *Epilobium angustifolium.* |
| *Leucoma salicis* L. | 91 St. Cyrus NNR, one, 1985.<br>92 Inverurie, one (Trail 1878); Aberdeen (Reid 1892).<br>93 Peterhead, one (Trail 1878); Pitcaple, one (Reid 1892). |
| *Agrostis clavis* Hufn. | 91 Banchory, scarce (Reid 1892); St. Cyrus NNR, one, 1983 (PM). |

| | |
|---|---|
| *Rhyacia simulans* Hufn. | Widespread but scarce (Reid 1892); 92 Kirkhill forest, one, 1985 (MT). |
| *Orthosia populeti* F. | 92 Muir of Dinnet NNR (PM). |
| *Craniophora ligustri* D. & S. | 91 Rare, Banchory (Reid 1892). 92 Muir of Dinnet NNR (PB). |
| *Mesapamea secalella* Remm. | Dissection of specimens of *secalis/secalella* from V-c's 92 and 93 showed 33% of the sample were *secalella*. The newly separated species appears to be widespread throughout the area. |
| *Nycteola revayana* Scop. | 92 Dinnet oakwood NNR, larva, 1984 (MWH). 93 Pitcaple (Reid 1892). |

(2) SUPPLEMENTARY LIST OF NEW VICE-COUNTRY RECORDS

(a) New to Kincardineshire (91): *Lampronia praelatella* D. & S.; *Pammene rhediella* Cl; *Dichrorampha aeratana* P. & M.

(b) New to S. Aberdeenshire (92): *Stigmella alnetella* Stt; *Schiffermuelleria subaquilea* Stt; *Semioscopis avellanella* Hb; *Monochroa tenebrella* Hb; *Epiblema costipunctana* Haw; *Dichrorampha sedatana* Busck.

(c) New to N. Aberdeenshire (93): *Fomoria weaveri* Stt.; *Bucculatrix demaryella* Dup; *Parornix anglicella* Stt.; *Phyllonorycter geniculella* Rag; *Coleophora juncicolella* Stt.; *C. striatipennella* Nyl; *Elachista regificella* Sirc; *E. gleichenella* F; *Diurnea phryganella* Hb; *Depressaria weirella* Stt.; *Scrobipalpa samadensis plantaginella* Stt.; *Philedonides lunana* Thunb; *Epinotia fraternana* Haw; *E. mercuriana* Frol; *Dichrorampha plumbagana* Treits.

(d) Species now recorded from all three vice-counties: *Micropterix aureatella* Scop.; *Eriocrania sangii* Wood; *Stigmella hemargyrella* Koll.; *Glyphipterix thrasonella* Scop.; *Swammerdamia pyrella* Vill.; *Coleophora paripennella* Zell.; *C. sylvaticella* Wood; *Chrysoesthia sexguttella* Thunb.; *Teleiodes sequax* Haw.; *Mompha raschkiella* Zell.; *Orthotaenia undulana* D. & S.; *Platyptilia gonodactyla* D. & S.

# THE BRITISH SPECIES OF *STEGANA* MEIGEN (DIPTERA: DROSOPHILIDAE) – DELETION OF *S. FURTA* (LINNAEUS) AND ADDITION OF FOUR SPECIES OF THE *COLEOPTRATA* (SCOPOLI) GROUP

By PETER J. CHANDLER*

Two species of *Stegana* have been included in the British list (e.g. Fonseca, 1965; Kloet & Hincks, 1976) under the names *Steganina coleoptrata* (Scopoli, 1763) and *Stegana furta* (Linnaeus, 1766). Most authors have regarded *Steganina* as a sub-genus of *Stegana* and this view is followed here.

Laštovka & Máca (1982) have provided an excellent revision of the European and north American species of sub-genus *Stegana* sensu stricto and of the *coleoptrata* (Scopoli) group, which encompasses all the species of *Steganina* known from these regions. While *S. furta* is the only European species of the typical sub-genus, seven European species have been discerned in *Steganina* (one of them Holarctic in distribution, two others also found in Japan) in addition to 3 species recorded only from north America.

*Stegana* (sensu lato) are slender bodied with the thoracic dorsum and abdomen ranging from yellowish brown to blackish brown. In *Steganina* the pleura are usually pale yellow below and with a broad dark stripe above and the face is partly pale with a dark transverse band but these parts are not particoloured in *Stegana* sensu stricto. The legs and halteres may be yellow or partly darkened. The broad wings, with strong veins and a brownish or blackish tinted membrane, are usually held curved down over the sides of the body when the fly is at rest.

They are associated with decaying trees and may be seen settled in crevices of tree trunks, visiting sap flows or swept around fungus encrusted dead wood. Laštovka & Máca (1982) summarised life history data, which suggested that some species may be associated with particular trees but many earlier records including rearing from under bark of various trees, required confirmation of specific identity. There appear to be some differences in habitat between the species here established as occurring in Britain but these do not always correspond to the European data on these species.

The association of "*coleoptrata*" with the fungus *Hypoxylon fragiforme* (Pers. ex Fr.) Kickx. (=*coccineum* Bull. ex Fr.) cited by Chandler (1978) was based on rearings by P. A. Buxton and myself from beech bark attacked by this fungus. The specimens from both rearings have now proved to be *S. nigrithorax* Strobl. Some *Amiota* species certainly develop in similar hard wood en-

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crusting fungi but it is unclear whether the larvae of *Stegana* have a definite association with fungal fruiting bodies or merely develop under bark attacked by the fungus.

Although easily recognised as a genus, all *Stegana* species look very much alike and there had been much nomenclatorial confusion in the literature. Duda (1934) recognised only one species in *Steganina* but included under it some named varieties which were of uncertain status. One of these, *stroblii* Mik, was recorded in error from north Scotland by Basden (1954), resulting in its citation as British by Bächli & Rocha Pité (1982) who recognised it as a distinct species. The material referred to by Basden belongs to the true *coleoptrata* while *stroblii* is synonymous with the much larger species *hypoleuca* Meigen.

The species composition worked out by Laštovka & Máca differs from that in the recent Palaearctic Catalogue (Soós et al., 1984) in that *hypoleuca* Meigen and *nigrithorax* Strobl are raised from synonymy under *coleoptrata* and replace the names *stroblii* Mik and *excavata* Okada respectively. The latter species and *longifibula* Okada were newly recorded from Europe. Two other species, *baechlii* and *similis*, were described as new. The usage of the name *hypoleuca* was based on a Lectotype designation by Laštovka & Máca from two female syntypes; they noted that Meigen had included other species under the name and it should be noted that Meigen's coloured illustrations of *hypoleuca* (Morge, 1975: Plate 269, Fig. 5) probably represent *similis*.

The characters given by Fonseca (1965) to separate *furta* and *coleoptrata* serve to distinguish the sub-genera. Examination of material in British collections has disclosed that at least five of the seven European species of *Steganina* occur here. On the other hand, no British material of *S. furta* has been discovered. Mr. E. C. M. d'Assis Fonseca has informed me that he had not seen British specimens of *furta* but it was included in his key on the authority of J. E. Collin. However, in the Verrall-Collin collection (Hope Dept.) the series under the name *curvipennis* (Fallén), a synonym of *furta*, consisted of *coleoptrata* (Scopoli) while the series under the latter name comprised other species: all were *similis* Laštovka & Máca except one male of *nigrithorax* Strobl. Collin's "*curvipennis*" were all collected later than his declaration (1911) that he had not seen a British specimen of *curvipennis*, "though it must occur in Britain" on the authority of Haliday. Both *coleoptrata* and *furta* were cited as British by Haliday (1856) but without supporting data. Haliday (1833) had described a new species as *Stegana annulata*, which he placed in synonymy under *coleoptrata* in 1856. There is no material of *Stegana* in Haliday's collection (in the National Museum, Dublin) and Laštovka & Máca were thus unable to decide on the identity of *annulata*. Although the description is short, it could only refer to *coleoptrata* of the species known from the British Isles, and this

is also the most likely species to occur in Ireland from its British distribution. Unfortunately, no material of *Stegana* has been collected in Ireland more recently although occurrence in some of the older woods there might not be unexpected.

It is not known on what Haliday based inclusion of *furta* in the British list, but until definite evidence to the contrary becomes available, I consider that *furta* should be deleted from our list. *S. furta* is widespread in central and southern Europe, recorded from dry wooded and open habitats by Laštovka & Máca. I have taken it by sweeping in various habitats, mainly by wooded streams, in Spain and France. It has been reared from birch bark attacked by beetles. The type material of *furta* and its synonym *curvipennis* were, however, from Sweden and all seven species of *Steganina* also occur both in Scandinavia and in central Europe. It is thus possible that both *furta* and the other two *Steganina* may occur in Britain. *S. mehadiae* Duda is another large species similar to *hypoleuca* but with the thorax mainly black above and the wings more evenly darkened, while *S. baechlii* Laštovka & Máca is a small species with the frons strongly narrowed in front, while it is nearly parallel sided in the four small species here recorded from Britain.

Laštovka & Máca figured all aspects of the ♂ and ♀ genitalia of all species recognised by them. The difference between species is small (especially in females) but apparently constant. The lateral view of the clasper ("surstylus" or gonostylus) provides the readiest means of separating species and, if the hypopygium is deflected before drying, can be used to recognise dry specimens. External characters are less constant and the key provided by Laštovka & Máca requires great care in interpretation. The British material examined may be sorted on the basis of the following key, in which *furta* is included for convenience, but examination of genitalia is desirable for confirmation. Teneral examples with less pronounced colour characters are frequently encountered.

## Key to British species of Stegana

1 Longer eye axis vertical, frons and face making obtuse angle in profile (Fig. 2). Mesonotum and abdomen black, face and pleura blackish without distinct pattern. Palpi dark. Frons dull yellow in front without dark transverse band. Femur I dark apically, II-III mainly dark, tibiae yellow. Wing length ♂ 2,3-2.8, ♀ 3.0-3.3 mm. (sub-genus *Stegana* sensu stricto) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . *furta* (Linnaeus)

– Longer eye axis more horizontal, frons and face making a right angle in profile (Fig. 1). Body colour various, face pale with a dark horizontal band below, pleura pale below with a broad straight edged longitudinal stripe above. Palpi yellow. Frons shining, with more extensive dark markings. Legs with dark markings more restricted. (sub-genus *Steganina* Wheeler) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2

2 Large species, wing length 5.0-5.5 mm in ♀, about 4 mm in ♂. Acrostichals more numerous, in 14-20 rows. Palpi wide, with more than 20 setae. Wing strongly darkened to middle of cell r4+5, paler behind. Mesonotum yellowish orange, sometimes with darker markings on disc. Frons with dark markings on disc not separated from subapical dark markings, more extensively orange near vertex. . . . . *hypoleuca* Meigen

– Smaller species, wing length less than 4.0 mm in ♀ and 3.5 mm in ♂. Acrostichals in 8-10 rows. Palpi narrower, with less than 15 setae. Wing darkened in cell rl and anterior part of r2+3, then progressively fading behind but entire wing more suffused than in *hypoleuca*. . . . . . . . . . 3

3 Thorax blackish on mesonotum and scutellum. Halteres with knob more or less darkened. Frons almost entirely dark with markings on disc fused with deeper black subapical band, only small pale spots about proclinate bristles. Legs with femur I dark apically, II-III black on apical half, tibiae II-III with dark bands basally. Wing veins more blackish. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . *coleoptrata* (Scopoli)

– Thorax with mesonotum yellowish brown on ground with more or less extensive dark brown discal markings. Halteres with knob yellow (knob brownish apically in some examples). Dark markings on disc of frons usually more separate from subapical black band. Wing veins more brownish. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 4

4 Mid and hind legs with femora and tibiae bearing distinct brown to black bands on apical half of femur and basal half of tibia. Genae wider, ratio of short diameter of eye to their maximum width (in profile) less than 3, subequal to width of third antennal segment. Frons with orbits as well as transverse area above subapical black band yellow. . . . *nigrithorax* Strobl

– Mid and hind legs with femora and tibiae bearing at most vague light brown bands in these positions. Genae narrower, ratio of short diameter of eye to their maximum width 3 or more, generally narrower than third antennal segment. . . . . . . . . . . . . . . . . . . . . . . . . . . . . 5

5 Thorax with mesonotum lighter yellowish in front and at sides, with more or less confluent dark stripes on disc. Third antennal segment more ovoid, with rounded tip. Colouration of frons similar to *nigrithorax*. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . *longifibula* Okada

– Thorax without distinct stripes, shining dark brown markings covering most of disc not so clearly contrasted with pale areas. Third antennal segment more elongate oval, not broadly rounded apically. Frons with dark discal area extending to bases of reclinate orbital bristles, but broad yellow areas around bases of proclinate bristles. . . . . . . . . . . . . . . . . . . . . . . . . . . . *similis* Laštovka & Máca

*Stegana* are rarely found by general collecting because of their close association with decaying wood. They are, however, widespread in wooded areas and it is hoped that the present work will stimulate further study of the distribution and biology. The limited material studied is located in the collections acknowledged below and in that of the author. Because distribution of each species is as yet uncertain, all localities known to me are cited under each species. Flight periods stated include all months between the dates given.

**Stegana hypoleuca Meigen**

*Stegana hypoleuca* Meigen, 1830
*Stegana stroblii* Mik, 1898 (syn. Laštovka & Máca, 1982)

The record of *stroblii* by Basden (1954) being referred to *coleoptrata*, only a single British example of *hypoleuca* has been examined. This fine specimen was swept from birch foliage in a pure birchwood, but an extensive search failed to reveal further individuals. Laštovka & Máca stated that their Czech material was found on oaks.

Material examined: 1 Scottish ♀, 4 Swedish ♀.
TAYSIDE (Perthshire): Struan Wood,, 12.vi.1982 (I. F. G. McLean, in his collection).

**Stegana coleoptrata (Scopoli)** (fig. 4)
*Musca coleoptrata* Scopoli, 1763
? *Stegana annulata* Haliday, 1833

The most widespread *Stegana* in Britain, although less frequent than *similis* in the south. Several localities are birch woodland and it has been beaten from birch foliage. Other records are from mixed woodland and Collin took both this and *similis* in his garden at Newmarket. The Windsor example was a female taken at oak sap by Mr. A. A. Allen. Basden (1954) recorded a series of both sexes of *coleoptrata* (material in Royal Scottish Museum, examined), taken by O. W. Richards at Beinn Eighe on 8.vii.1953 on a dead fallen birch bearing *Stereum* species.

Material examined: 10 ♂, 12 ♀. 10.vi.-7.ix.
ROSS: Beinn Eighe; near Gairloch, above Loch Shieldaig. INVERNESS: Speybridge; Nethy Bridge; Cannich. MORAY: Grantown. LEICS: Ulverscroft. CAMBS: Cambridge; Woodditton Wood; Chippenham Fen; Newmarket; Abbotts Wood. BERKS: Windsor Forest. SURREY: Chobham Common. W. KENT: Tunbridge Wells.

**Stegana longifibula Takada** (fig. 6)
*Stegana longifibula* Takada, 1968

This is the least well known of the smaller British species and its precise habitat cannot yet be stated. An apparently southern species in Britain.

Material examined: 6♂, 4 ♀. 28.vi-27.viii.
HEREFORD: Mains Wood; Monnow. SALOP: Broseley. CAMBS: Cambridge. E. KENT: Blean Wood; Woolwich Wood.

**Stegana nigrithorax Strobl** (figs. 1, 3)
*Stegana coleoptrata* var. *nigrithorax* Strobl, 1898
*Stegana excavata* Okada, 1971 (syn. Laštovka & Máca, 1982)

Principally found in beechwoods, around decaying logs and stumps and the larval association mentioned above may be regular. It appears to be frequent at least in the south. Buxton reared a male (in British Museum (Nat. Hist.)) in v.1955 from beech bark bearing *Hypoxylon* collected at Gerrard's Cross. I reared a male on 28.xii. 1971 from beech bark bearing the same fungus collected at Savernake on 29.ix.1971. These emergence dates are no doubt abnormal.

Material examined: 12 ♂, 14 ♀. Early vii-4.ix.
DUMBARTON: Balmaha. CUMBRIA: Windermere. HEREFORD: Mains Wood. GLOUCS: Bristol; Inglestone Common. WILTS: Farley; Odstock; Savernake Forest. HANTS: New Forest; Selborne Hanger; Alice Holt Forest. DORSET: Studland. BERKS: Windsor Forest. BUCKS: Gerrard's Cross. W. KENT: Cuckoo Wood, Downe; Scadbury Park, Chislehurst. E. KENT: Ham Street Woods.

**Stegana similis Laštovka & Máca** (fig. 5)
*Stegana similis* Laštovka & Máca, 1982

This occurs in mixed woodland throughout southern England but appears especially frequent in the New Forest, whence 70 of 106 specimens examined originate. It occurs around rotten wood but nothing more precise is recorded of its biology. Data given by Laštovka & Máca indicate it to be the most frequent *Stegana* throughout Europe.

Material examined: 20♂, 86 ♀. 19.vi-5.ix.
SALOP: Broseley. HEREFORD: Cusop. GLOUCS: Chalford; Leigh Woods; Blaise Woods.
SOMERSET: Failand; Ebbor Gorge. HANTS: New Forest; Lymington. OXON: Bix Bottom. BERKS: Unhill Wood. CAMBS. Cambridge; Newmarket; Chippenham Fen. W. KENT: Tunbridge Wells; Cuckoo Wood, Downe. E. KENT: Soakham Down.

**Stegana furta (Linnaeus)** (fig. 2)
*Musca furta* Linnaeus, 1766
*Drosophila curvipennis* Fallén, 1823
*Stegana nigra* Meigen, 1830

No British material has been examined and this species is deleted from the British list.

Material examined: 5♂, 5♀. 26.v-24.vi.
**Spain**: HUESCA: Canfranc, pinewood; near Santa Cilia, by Rio

Gas, poplar plantation. LOGROÑO: Villanueva de Cameros, wooded bank of Rio Iregua.

**France**: ARIÈGE: Ussat-les-Bains, by wooded stream in meadow. LOT: Rocamadour, meadow by stream.

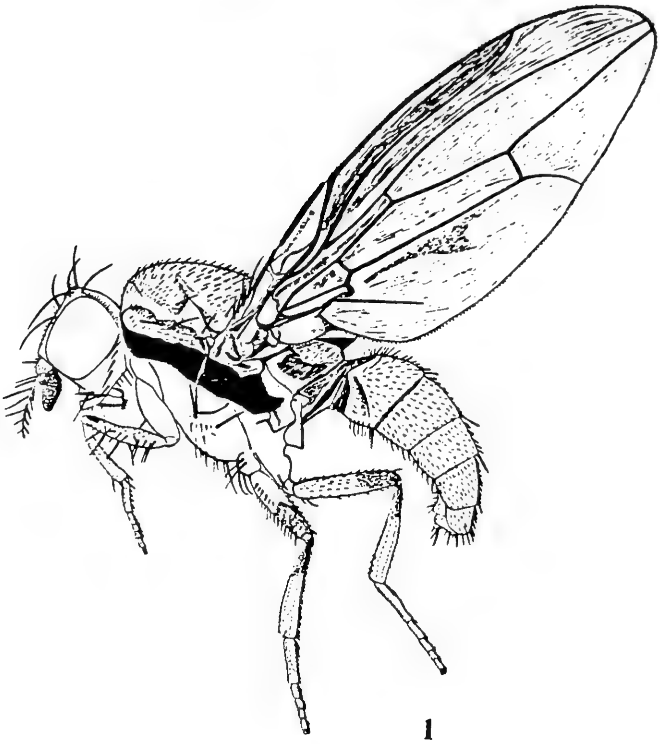

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Fig. 1. *Stegana nigrithorax* Strobl, female.

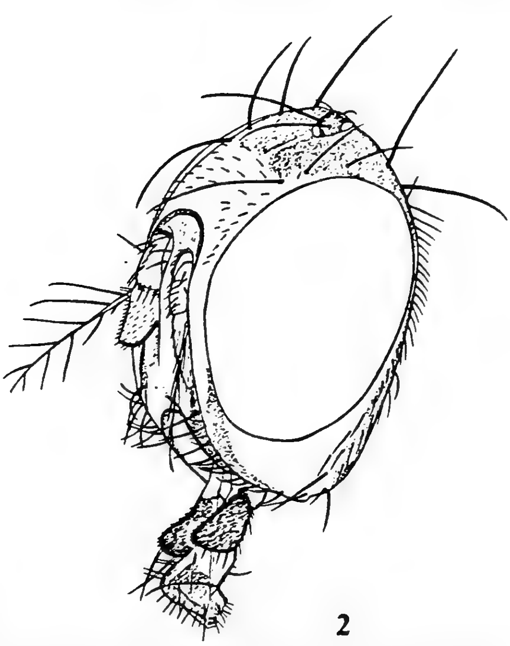

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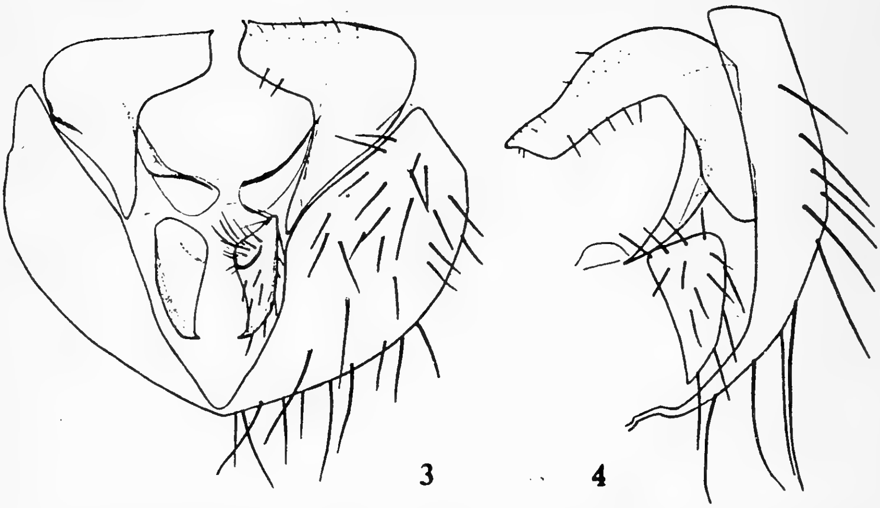
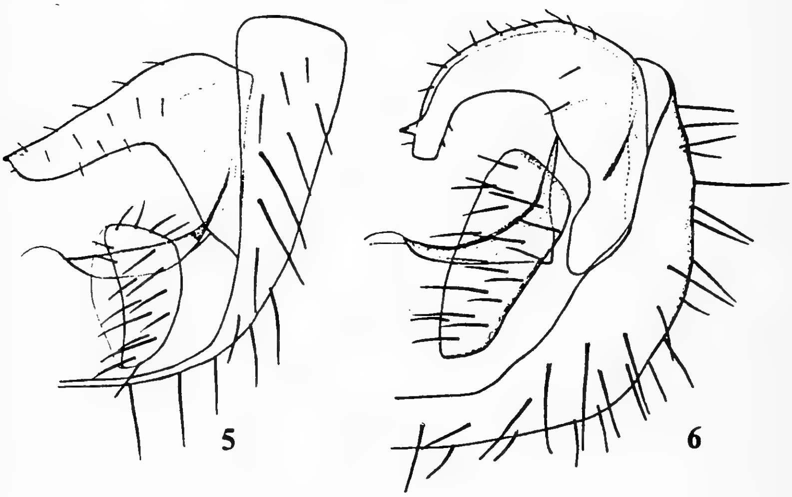
Fig. 2. *Stegana furta* (Linnaeus), head.




Figs. 3-4. Male genitalia, posterior view. – 3. *Stegana nigrithorax* Strobł. – 4. *Stegana coleoptrata* (Scopoli).




Figs. 5-6. Male genitalia, posterior view. – 5. *Stegana similis* Laštovka & Máca. – 6. *Stegana longifibula* Takada.

## Acknowledgements

I wish to thank Ian McLean for permitting me to publish his exciting discovery of *S. hypoleuca*. The authorities of the British Museum (Natural History), the Hope Department of Entomology, the Royal Scottish Museum, the National Museum of Wales and the Cambridge University Museum have kindly enabled me to study the material of *Stegana* in their collections. Mr. E. C. M. d'Assis Fonseca both permitted me to examine *Stegana* from his collection and gave helpful advice on an earlier draft of the keys.

## References

Bächli, G. 1982. On the type material of Palaearctic species of Drophilidae (Diptera). *Beitr. Ent.*, **31**: 289-301.

Bächli, G. & Rocha Pité, M. T. 1982. Annotated bibliography of Palaearctic species of Drosophilidae (Diptera). *Beitr. Ent.*, **32**: 303-392.

Basden, E. B. 1954. The distribution and biology of Drosophilidae (Diptera) in Scotland including a new species of "*Drosophila*". *Trans. R. Soc. Edinb.*, **62**: 603-654.

Chandler, P. J., 1978 Fungi. pp. 199-211. In Stubbs, A. & Chandler, P. (eds.). *A Dipterist's Handbook.* 255pp. The Amateur Entomologist's Society. Hanworth, Middlesex.

Collin, J. E. 1911. Additions and corrections to the British list of Muscidae Acalypterae. *Entomologist's mon. Mag.*, **47**: 182-187.

Duda, O. 1934. 58g. Drosophilidae (part 1). In Lindner, E. (ed.). *Die Fliegen der palaearktischen Region,* **6** (1): 1-64. Schweizerbart, Stuttgart.

Fonseca, E. C. M. d'Assis 1965. A short key to the British Drosophilidae (Diptera) including a new species of *Amiota. Trans. Soc. Br. Ent.,* **16**: 233-244.

Haliday, A. H. 1833. Catalogue of Diptera occurring about Holywood in Downshire. *Ent. Mag.,* **1** (2): 147-180.

Haliday, A. H. 1856. Addenda and corrigenda. In Walker, F. *Insecta Britannica Diptera.,* **3**: xxiv + 1-352.

Kloet, G. S. & Hincks, W. D. 1976. A check list of British Insects. Second edition. Part 5: Diptera and Siphonaptera. *Roy. Ent. Soc. Lond., Handbk. Ident. Br. Ins.,* **11** (5): ix + 1-139.

Laštovka, P. & Máca, J. 1982. European and north American species of the genus *Stegana* (Diptera, Drosophilidae). *Annot. zool. bot. Bratislava,* **149**: 1-37.

Morge, G. 1975. Dipteren-Farbtafeln nach den bisher nicht veroffentlichten Original-Handzeichnungen Meigens: "Johann Wilhelm Meigen: Abbildung der europaeischen zweiflügeligen Insecten nach der Natur." *Beitr. Ent.,* **25**: 383-500, 305 pls.

Soós, A. et al. 1984. *Catalogue of Palaearctic Diptera.* Volume 10: Clusiidae – Chloropidae. 402 pp. Elevier Science Publishers, Amsterdam and Akadémiai Kiodó, Budapest.

PAPESTRA BIREN GOEZE, THE GLAUCOUS SHEARS (LEP.: NOCTUIDAE) IN OXFORDSHIRE – I would like to record the finding of a female *P. biren* in a spider's web woven on a down-stairs window-sill on 29th June 1986. I believe this to be the first record for Oxfordshire – E. C. L. SIMSON, Crosbythwite, Plowden Park, Aston Rowant, Oxford.

SOME UNUSUALLY STRONG SECOND BROODS OF LEPIDOPTERA IN N. W. KENT IN 1985 – Temperatures were below average in N. W. Kent in each of the first six months, except April which was deficient in sunshine. This may have caused delayed emergences and slower development of larvae, and perhaps heavier mortality amongst them. July was sunny and dry with above average temperatures, August cool and wet, but September was warm with the second half the warmest on record, to be followed by a mild October. Perhaps these conditions contributed in causing some remarkable second broods of moths in 1985 if light trap records reflect the true position. Two of the three species concerned produce larvae from first generation moths which may mature to give second brood imagines, or hibernate as larvae (or pupae). The following species appeared at my m.v. light at Dartford more commonly in their second brood than in any of the previous sixteen years, and also more abundantly than in the first generation. In 1985 the species were:–

(a) *Opisthograptis luteolata* L. From August 17th until September 25th this moth was abundant at the light although many remained settled outside the trap. Their numbers far exceeded those of generation Ia (from over-wintered pupae) noted from May 15th until June 5th and those from generation Ib (from hibernated larvae) seen from June 30th until August 1st, combined. Incidentally, it is not generally possible to separate the first generation specimens in this manner. A third brood of moths was reared indoors, the imagines emerging in late October and November.

(b) *Campaea margaritata* L. The 1985 second brood was quite phenomenal; it was in evidence from August 29th until September 29th, a longer period than usual. As many as twelve specimens were present on September 8th, and nine on the 12th; the first brood has never produced so many on one night. This species also tends to be reluctant to enter the trap, the moths settling on the surrounding vegetation.

(c) *Chloroclysta truncata* Hufn. From August 25th until October 12th this was the commonest moth at the light, while in both 1984 and 1985 first brood specimens were scarce. Often males especially of the second generation are small individuals, but in 1985 they could be said to be characterized by their large size, being quite comparable with those of the first brood.

With these exceptions 1985 did not produce significantly large second generations of other bivoltine species, on the contrary such species as *Epirrhoe alternata* Mull., *Xanthorhoe spadicearia* D. & S. and *Thera obeliscata* Hubn., usually common in the second brood, were distinctly scarce. – B. K. WEST, 36 Briar Road, Bexley, Kent.

# ISLAND INTERLUDES – GUERNSEY AND THE ISLE OF MULL IN 1986

By M. D. BRYAN *

The heavy rain which greeted our arrival in St. Peter Port, Guernsey on June 11th was not unexpected during the first half of the appalling 1986 season. Fortunately, the weather improved in the afternoon and uniquely for '86 remained hot and sunny for the duration of our holiday. Editorial constraints prevent a lengthy description of Guernsey, but contrary to popular opinion, the island is not covered by coast-to-coast greenhouses! The scenery ranges from spectacular maritime cliffs in the south to almost flat sandy heaths in the north. A warm, moist climate combines with a varied geology to support a distinct flora and fauna which is obviously influenced by the close proximity of the French mainland. The insect fauna is interesting and includes resident species such as the great dart (*Agrotis crassa* Hubner) not found on mainland Britain. The very rare and local mole cricket (*Gryllotalpa gryllotalpa* L.) occurs as a garden pest in the parish of Vale! More importantly, fellow Net Club members will be pleased to hear that , in the absence of VAT, petrol and 'liquid refreshments' are very sensibly priced on Guernsey!

I noted ten species of butterflies on the island. Most interesting was the "orange-spotted" form of the speckled wood (*Pararge aegeria* L.) I cannot find a subspecific name for Channel Island *aegeria* so I presume they are referable to ab. *intermediana* Lempke? (Which seems a little silly as the island population as a whole bears the distinct speckling!) My first encounter with this species took place on the windswept coastal cliffs of the Pointe de la Moye – a very unpromising site for *aegeria*! Three males were patrolling a short stretch of path shaded by few wind-shaped blackthorns. All were of a dark appearance and displayed the orange-tinted speckling. Subsequently, I found *aegeria* to be widely distributed in the woods and scrubland of the southern part of the Island. It was most common on the Jerbourg peninsula. Several captive-bred pupae of *aegeria* from Worcestershire accompanied us to Guernsey and conveniently began to emerge whilst we were there. I could therefore easily compare the two series whilst on the setting boards and the differences in the shade of the speckling was very noticeable. Male specimens demonstrated the *intermediana* colouring most clearly. Perhaps the females of later generations are more distinctively coloured? Unfortunately, I failed to find any female *aegeria* during the last days of our holiday. I would have been very interested in breeding *intermediana* at home in Worcestershire.

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Of the remaining butterflies noted on Guernsey, green-veined whites, green hairstreaks, holly blues, common blues and wall butterflies were all widespread. Despite an intensive search, I found only one crushed larva of the Glanville fritillary (*Melitaea cinxia* L.) My timing was out as I was too late for the larvae and too early for the imagines.

Our cottage was infested by a small, black ant which, oddly enough, became active mainly after dark. Few would be seen during the day, but at dusk an eight-lane freeway developed between the front door and the kitchen waste bin. Eleven-months-old Francesca quickly discovered the ants and sent many toiling workers heavenwards by use of her index finger or foot accompanied by loud cries of "A-A-A" (pronounced as in ant)! Over several bottles of sensibly priced strong lager, I mused as to whether my interest in entomology could have been genetically transmitted to my daughter. My philosophical rambings were abruptly ended on the following morning when she applied her unique method of study to the unexamined contents of my moth trap!

Unfortunately, cool, clear moonlit nights were the price to be paid for hot, sunny days. I ran my 125 W moth trap every night, but I only managed to run up a list of sixty-five 'macros'. Of these, only three species were new to me. These were the white colon (*Sideridis albicolon* Hb.), white point (*Mythimna albipuncta* D. & S.) and L-album wainscot (*Mythimna l-album* L.). I managed to trap a female *albipuncta* but unfortunately I dropped the wrong specimen into the killing jar. For this catastrophic error of judgement I blame the sensibly priced lager!

We thoroughly enjoyed our short stay on Guernsey which satisfied our dual needs for a "family holiday" and a collecting trip. A single week was not long enough to fully explore the Island and when we return, it will be for a longer stay. To provide a striking contrast to Guernsey, we chose the mist, peat, rain and mountains of the Isle of Mull. We first visited this dramatically beautiful island in 1984 and that trip was entomologically very successful. Our host on Mull was my good friend and Net Club founder-member Mr. Boyd Barr. We arrived in Salen on July 9th. I wish that I could describe the moths taken on our first night, but unfortunately Boyd suggested a "wee dram" early in the evening. Visitors to Salen will be familiar with the real meaning of this seemingly innocent phrase! Suffice it to say that the "wee dram" was concluded by the first rays of dawn over the Morvern Hills and what remained of my concentration was occupied by finding my bedroom rather than nocturnal Lepidoptera!

Of the first half of the following day, I remember little. By late morning we had set out in cool and windy conditions for the Easfors Waterfall on the west coast of the island. Lepidoptera were

few and far between and I found only single specimens of the speckled wood, meadow brown (*Maniola jurtina* L.) common blue (*Polyommatus icarus* Rott.) and transparent burnet (*Zygaena purpuralis caledonensis* Reiss). On Mull *aegeria* and *jurtina* are represented by the subspecies *oblita* Harr. and *splendida* White respectively. I have never been very impressed by the Mull *aegeria* – perhaps the Island lies too close to the mainland for the development of really distinct *oblita* characteristics? According to the original description of *jurtina splendida* by Buchanan White (quoted in Thomson, 1980) this subspecies is supposed to be larger than mainland specimens. This does not appear to be true for the Mull population. I measured the wingspans of males from Mull and the Midlands and the Mull specimens proved on average to be 1mm smaller. The major difference between the two series was the well-developed forewing "orange blotch" of the Mull males (And that, dear reader, is about as close as we will ever get to 'real science' in any of my writings!)

On July 11th I netted a specimen of the dragonfly *Orthetrum coerulescens* F. which Boyd assured me was a good record for Mull. Fellow Lepidopterists may well imagine my disappointment when I later added a hoverfly (*Brachypalpus lenta* Meigen) to the Mull list. I usually study Diptera with the aid of a rolled-up newspaper and I could raise little enthusiasm for my record! Later on July 11th, my mood was considerably improved by the discovery of a strong colony of the large heath (*Coenonympha tullia* Mull.) which is represented on Mull by ssp. *scotica* Staud. This colony provided three specimens of ab. *obsoleta* Tutt which were quite devoid of underside rings and a number of broody females. I would like to pair the resulting offspring with examples of ssp. *davus* F. from Shropshire females – but July 1987 is a long way off and I never count my butterflies before they hatch.

I also managed to obtain ova from *icarus* females. On Mull, this butterfly is represented by a large, univoltine form which produces very blue females during the long flight period from late June to August. Will this habit of univoltinism remain with the stock when reared in Worcestershire? Oddly enough, some pupae of the green-veined white (*Pieris napi* L ?ssp. *thomsoni* Warr) reared from Boyd's stock steadfastly refused to emerge in Worcestershire in August '86 although the local second brood was out and about in large numbers. I need more *napi* from Mull! This habit of univoltinism may be under genetic control, but I suspect that in the case of *icarus* day-length may also be involved. These questions can only be answered via the breeding cage and I will look forward to the results with interest.

The moth trap was not a popular pastime during our stay. For some perverse reason, Boyd has chosen to live next to a bog

which produces the most prolific and vicious midges in the whole of Scotland! Their attentions, combined with the poor season, resulted in a poor list of species. We had more success with the Zygaenidae and the transparent burnet, (*Zygaena purpuralis*) in particular, was again abundant on Treshnish Burg and the hillside overlooking Calgary Bay. I have had little success in breeding this species and the reasons for my failure remain unclear. The exact opposite is true of the slender Scotch burnet (*Zygaena loti scotica* Rowland-Brown) which I obtained from Mull in 1984. The larvae overwinter easily but must be allowed to sun-bathe in spring. The males have an alarming interest in sex and I can state that *loti* males are the only British moths I have known to carry out violent acts of rape (and I have witnesses to prove it)! The only other moths I have space to mention are some very beautiful dove-grey specimens of the netted carpet (*Eupithecia venosata* F.) which were bred by Boyd from sea campion flowers growing at the foot of the spectacular Gribun Rocks.

Butterflies were scarce on Mull compared to the 'bumper season' of 1984 when dark green fritillaries (*Argynnis aglaja* L. ssp. *scotica* Watk.) were as common as 'cabbage-whites' at home! We saw very few examples in '86, which is a pity as Mull larvae produce some beautiful dark females. Mull graylings (*Hipparchia semele* L.) have very blackish undersides to the hindwings, but I saw only one specimen of this butterfly in '86. Our stay on Mull was blighted by poor weather which only worsened an already lean season for Lepidoptera. I must add that our lack of entomolgical success was more than compensated for by the company of a long-standing and trusted fellow Net Club member to whom I extend our sincere thanks for his friendship, hospitality and unique ability to find butterflies in pouring rain! Well done, B.B!

I cannot explain fully the strong attraction which island insect populations exert on me. I shall continue to drag my family to increasingly obscure localities where the lager is plentiful, the company convivial and where the insects pose questions which can only be answered in my breeding cages! Guernsey and Mull provided shafts of sunshine in the otherwise dull season of 1986.

## Reference

Thomson, G. (1980) *The Butterflies of Scotland* Croom Helm.

# Notes and Observations

AN EXTREME ABERRATION OF THE SMALL TORTOISESHELL AGLAIS URTICAE L. — Though regrettably very late in reporting this due to other work, I thought it worth recording due to its' extreme nature. On Monday 16 July 1984, in Kingspark Wood, W. Sussex, Mr. G. C. Haines and I observed a black butterfly flying along the stony ride ahead of us. Neither of us could imagine what it was and due to its' habit of flying for a few yards before settling very briefly for a second or two, repeated three or four times, it was a little while before I was able to get close enough to idnetify. It turned out to be an extreme aberration of *Aglais urticae* L. in which virtually the whole upper surface was a sooty black. Even the blue crescent and wavy line border was missing and from a very brief observation of only a couple of seconds, it appeared that there was only a small amount of red marking at the costal margin, curiously where the ochreous markings occur on normal specimens. In this it seems to have been an even more extreme version of ab. *semiichnusoides* Pronin. as indicated under Fig. I, Plate 18, of *Aberrations of British Butterflies* by A. D. A. Russworm, (Classey 1978).

Unfortunately, I was unable to obtain a photograph as, tired of my attention, it shot up and over the trees and was not seen again, despite visits over the next two days – S. L. MEREDITH, 5 Rutlish Road, Merton Park, London SW19 3AL.

WHITE-SPOTTED PUG (EUPITHECIA TRIPUNCTARIA H.-S.) (LEP.: GEOMETRIDAE) IN CARDIGANSHIRE — A single female of this species was caught in the Rothamsted Insect Survey light trap at the N.C.C. reserve at Tregaron, Cardiganshire (now part of Dyfed) (Site No. 331, O. S. Grid Ref. SN 618) on the night of 27/28-vi-1986. The identity of the specimen was confirmed by examination of the genitalia. So far as I am aware this species has not previously been recorded from Cardiganshire.

Thanks are extended to I. J. L. Tillotson for operating the trap at Tregaron and for identifying most of it's catches. ADRIAN, M. RILEY, Dept. Entomology, Rothamsted Experimental Station, Harpenden, Herts, AL5 2JQ.

LYMANTRIA MONACHA L. (LEP.: LYMANTRIIDAE) IN LONDON – On 6th August 1986 a male example of *L. monacha* (the black arches) was found inside a well-lit building in the Elephant and Castle area of London. Although the moth occurs sporadically in the Home Counties, I believe this may be the first record for London. R. McCORMICK, 125 Brocks Drive, North Cheam, Surrey.

SCELIODES LAISALIS WALK (LEP.: PYRALIDAE) IN LEICESTERSHIRE — In my recent note (*Ent. Rec.* **98**: 203) the year of capture of this specimen was accidentally omitted. It should be 1979, which makes the specimen the second chronological British record. — DENIS F. OWEN, 66 Scraptoft Lane, Leicester LE5 1HU.

SITOCHROA PALEALIS D. & S. (LEP.: PYRALIDAE) IN MID-KENT — I was interested to read the note by Messrs. Chambers and Easterbrook on the taking of this species at m.v. light at East Malling (*Ent. Rec.* **98**: 256-257), and can confirm their suspicion of this moth breeding locally. On the 26th July 1986 I found a strong colony of *palealis* associated with *Daucus carota* along the banks of the river Medway some two miles north of the East Malling site. In an area of some 20 yards by 50 yards where the wild carrot was the dominant plant at least 50 moths must have been disturbed, but it was not seen elsewhere even though the whole day was spent collecting in rough grassland and scrub in that general area. E. G. PHILP, Maidstone Museum, St. Faith's Street, Maidstone, Kent ME14 1LH.

ZELLERIA HEPARIELLA STT. (LEP.: YPONOMEUTIDAE) IN KENT. — While carrying out a regular survey of arboreal leafhoppers in Perry woods I invariably disturb one or two resting moths. On 22nd November 1986 my attention was drawn to an intriguing pale reddish brown moth that I had beaten from a lone yew tree. Its posture with downward pointing head was reminiscent of an *Argyresthia* yet not so pronounced. My colleague Philip Jewess kindly tracked it down as *Zelleria hepariella*. The adult is said to overwinter on evergreens, especially yews, and the larva to feed on ash.

Meyrick states that it is uncommon in southern England. A preliminary search (PJ) has revealed very few recent captures. The records in the Biological Archives at Maidstone Museum list two additional localities in Kent, Olantigh (M. A. Enfield) and Detling (N. Heal). — J. BADMIN, Coppice Place, Perry Woods, Selling, Kent, ME13 9RP. [*Z. hepariella* has seldom been noted in Kent, and the only occasion when I have seen it in the Country was when one occurred to me at light at West Wickham on the 14th August 1986. Its apparent scarcity may be because its larva is probably a canopy feeder. I once found the larvae in considerable numbers in Caernarvonshire, having been taken to the locality by my friend Mr. H. N. Michaelis. On that occasion the larvae were all feeding on the top leaves of a dwarf ash and but some two feet only from the ground. From these I bred a good series exhibiting much colour variation ranging from a variety of reddish forms to grey and ochreous. — J. M. CHALMERS-HUNT.]

THERA CUPRESSATA GEY (LEP.: GEOMETRIDAE) – FIRST RECORD FOR ALDERNEY – On the night of 30th September/1st October, on a recent visit to Alderney, a single specimen of *Thera cupressata* was trapped in an Actinic trap in a garden at Platte Saline. The moth has only recently been added to the Guernsey list with two individuals taken in October 1985 and a further two in July 1986. (P. Costen *Ent. Rec.* **98**: 217). The moth has also been reared through from two larvae beaten from *Cupressus macrocarpa* in the south west of Guernsey (T. N. D. Peet, see below). RICH & MARGARET AUSTIN, Maymyo, Les Amballes, St. Peter Port, Guernsey. C.I.

THERA CUPRESSATA GEY. (LEP.: GEOMETRIDAE) BREEDING ON GUERNSEY – further to the discovery of this species by Costen and Peet (*Ent. Rec.* **98**: 217-218), two first instar larvae were beaten from *Cupressus macrocarpa* in the Parish of St. Peters during early August 1986. They were bright green, highly cryptic, stumpy night feeding larvae. Growth was slow, with pupation taking place in the second week in September. The pupa is a bright lime-green, the moths emerging during the second week in October.

Local entomologists have been less fortunate with attempts to breed the recently discovered *Eupithecia ultimaria* Boisd. from tamarisk (*Tamarix* sp.) – despite finding 20 larvae during August 1986, all died prior to pupation. T. D. N. PEET, Le Chene, Foret, Guernsey.

XANTHANDRUS COMTUS (HARRIS) (DIPT. SYRPHIDAE) NEW TO STAFFORDSHIRE (VC39) – On September 19th, 1986 I was on Cannock Chase in Staffordshire SJ977188 collecting hoverflys for the hoverfly recording scheme, when I captured a male specimen of *Xanthandrus comtus* (Harris). It was confirmed by Mr. G. Halfpenny of the City Museum and Art Gallery in Stoke-on-Trent to be a new record for Staffordshire. I also contacted Mr. P. Entwistle the organiser of the hoverfly recording scheme who confirmed it's scarcity and told me it was the first record of the species he had received this year. M. C. BRIAN, 1, Trevelyans Green. Trinity Fields, Stafford, ST16 1LJ.

RED ADMIRAL OR RED ADMIRABLE? – In his *Key to the names of British butterflies and moths* (1959) McLeod has "Admiral; contraction of the old name 'Admirable'", and in *South's British butterflies* (1973) Howarth writes 'Moses Harris in 1766 knew this species as the Admirable and the common name we now use for it is a corruption of this'. The facts are the other way round and it is 'Admirable' which is the corruption.

The scientific names of insects begin, as everybody knows,

with the 10th edition of Linnaeus' *Systema Naturae*, published in 1758. However, Linnaeus had started to give names to butterflies earlier than this. By 1758 he had decided that the larger butterflies should, for the most part, be called after characters in classical history or mythology, and he therefore changes some of the names he had already proposed. With regard to the red admiral, he had called it *Ammiralis* in the first edition of *Fauna Suecica* (1746), but altered it to *atalanta* in 1758 to comply with his new policy.

The word 'admiral' is derived from the Arabic 'amir-al-bahr' meaning 'lord of the sea'. This was Latinised 'ammiralis' and the word later confused with the Latin adjective 'admirabilis'. In 1746 Linnaeus called the silver-washed fritillary '*Imperator*', the general, the dark green fritillary '*Rex*', the king, the pearl-bordered fritillary '*Princeps*', the prince, the Queen of Spain fritillary '*Principissa*', the princess and the Glanville fritillary '*Comes*', the count. His names were all nouns, spelt with a capital letter, none of them adjectives. It is certain that by '*Ammiralis*' he intended the meaning 'admiral' and not 'admirable'. Incidentally, the name 'painted lady' also hales from the 1746 edition of *Fauna Suecica*, where Linnaeus calls it '*Belladonna*', beautiful lady (with cosmetic undertones), as does 'the peacock' which he called '*Oculus pavonis*', the peacock's eye. The 1758 name '*io*' has only a roundabout connection with the peacock. Io was beloved by Zeus and when this caused trouble with his jealous wife Hera he metamorphosed Io into a heifer and entrusted her to the care of Argus who had a hundred eyes; after Argus had been killed, his eyes were placed in the peacock's tail. We also owe 'death's head hawk-moth' (*Acherontia atropos* Linnaeus, 1758) to one of Linnaeus' earlier essays in nomenclature, for he originally named it '*Caput mortuum*' (*Amoenitates Academicae* **3**: 321). A. M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF.

DARK CRIMSON UNDERWING (CATOCALA SPONSA L.) IN WEST SUSSEX. — On the evening of the 8th August 1986, having set up my m.v. light at a coastal location not far from Littlehampton, I was most surprised to have a *sponsa* land at my feet, as it was not yet dark, and the sugaring had yet to be completed.

After boxing the apparently exhausted specimen, I began to ponder as to where it came from ! It flew in from the south, but all there was in that direction was sea — so was it a wanderer from another county, which had run out of land and turned back, or could it possibly have been an immigrant?

As this species has not been recorded from West Sussex for many years, I'd be most interested to hear any views other readers might have. — SEAN ODELL, 43 North Street, Worthing, West Sussex, BN11 1DU.

CATOCALA SPONSA L. (DARK CRIMSON UNDERWING) IN DORSET – A female of this local species was caught on the night of 11.viii. 1986 by my garden m.v. trap in Weymouth. This appears to be a new record for Dorset, although whether this specimen was an immigrant or vagrant remains uncertain. MICHAEL J. PARKER 9 East Wyld Road, Weymouth, Dorset.

DUSKY PEACOCK (SEMIOTHISA SIGNARIA HUBNER) IN WEST SUSSEX – On the night of the 28/29th June 1986, I took a specimen of this moth at my m.v. light in Worthing. At the time it was apparently only the third record of this species in the British Isles, though I have since heard of two others being taken during July in the South East, and possibly one other (not yet confirmed) from Steyning, which is also in West Sussex. – SEAN ODELL, 43 North Street, Worthing, West Sussex, BN11 1DU.

THE GOAT MOTH (COSSUS COSSUS L.) A CAUTIONARY TALE – The object of the exercise was to obtain, photograph, and rear through to the adult stage a larva of the goat moth (*Cossus cossus*). Preliminary research amongst entomological literature disclosed that it was, a) possible to hear the larva chewing inside the tree, and b) that bee-keeper's smoke puffed into the tunnels would enduce a larva to vacate its tree.

A tree currently inhabited by *Cossus* was duly located. It was a large, ancient oak in a very public place. Inability on our part to hear the larva chewing led us to approach our doctor – who keeps bees – and invite him to join an extraction expedition, bringing with him his stethoscope and bee-keeper's smoke apparatus. On arrival at the tree, he listened carefully with the stethoscope pressed to the trunk – to the amazement of passers-by – but could hear nothing. An enthusiastic application of smake at the entrance to a tunnel caused smoke to belch from numerous exit holes all over the base of the trunk, but nothing else emerged. Our efforts were, however, crowned with success when our imitation of a woodpecker attacking the tree caused a final instar larva to exit hastily.

The larva was borne home in triumph, housed in a rectangular glass aquarium with heavy plastic netting on the top, and given a fresh log on which it fed happily for several weeks. Then one afternoon when relaxing after lunch in a room on the other side of the house from the site of the aquarium, something tickled my arm. There on the arm of the chair, looking rather forlorn, sat our *Cossus* larva! Investigation revealed a ladder of silk climbing the aquarium wall, and a hole chewed in the netting cover. The runaway was incarcerated again, this time covered by plate glass. During the autumn it ran for several days, then disappeared into the sawdust provided for the purpose. The aquarium was placed in an outhouse for the

winter, but in order to prevent mould forming, the plate glass was replaced by stainless steel gauze weighted down by two bricks. The following May the contents of the aquarium were examined with a view to photographing the cocoon and pupa – but the inhabitant was nowhere to be found. In order to escape, that larva had lifted steel gauze and two bricks. The moral of this story is – if you wish to keep a larva of *C. cossus* safely in captivity, use a container built on the principle of Colditz Castle. M. BROOKS 7 Milton Road, Wimbourne, Dorset.

COMMOPHILA AENEANA (HUBN.) (LEP.: COCHYLIDAE) IN KENT– I took a specimen of this local and scarce moth in my garden on 30. vi.1986. It was flying, in bright sunshine, amongst hoary ragwort (*Senecio erucifolius*). The larva is said to feed in the rootstock and lower stem of common ragwort (*S. jacobaea*). There are very few confirmed localities for this moth in Kent. MELVYN CROW 9 Sandpiper Road, Whitstable, Kent.

ACLERIS LORQUINIANA DUP. (LEP.: TORTRICIDAE) IN SOUTH DEVON – On 5.viii.85 I took a specimen of this moth near Beer in South Devon. There is every reason to suspect that this and other records from the South coast for this species are indicative of resident populations. Certainly many spots on the coast of West Dorset and East Devon exhibit "fen" like conditions wherever fresh water springs break through the strata of the cliff and undercliff. Between Charmouth and Sidmouth *Phragmites* is locally dominant and *Lythrum salicaria* is generally common. Other wetland insects regularly seen in the area include *Chilo phragmitella* Hubn., *Mythimna obsoleta* Ochs., *Photedes pygina* Haw., *Rhizedra lutosa* Hubn. and *Arenostola phragmitidis* Hubn. P. J. BAKER, Mount Vale, The Drive, Sandhills Lane, Virginia Water, Surrey GU25 4BP.

EPERMENIA AEQUIDENTELLUS (HOFMANN) (LEP.: EPERMENIIDAE) ON PIMPINELLA SAXIFRAGA – On 17th September 1986 at Kynance Cove, Cornwall I found several *Epermenia* larvae mining leaves of *Pimpinella saxifraga*, which on 7th and 9th October produced *E. aequidentellus*. This species has previously been recorded in the British Isles only from *Daucus carota*, although it is known from *P. saxifraga* on the continent. R. J. HECKFORD, 67, Newnham Road, Plympton, Plymouth.

RECORDS OF DIASEMIOPSIS RAMBURIALIS (DUP.) (LEP.: PYRALIDAE) FOUND BY DAY. – Goater (*British Pyralid Moths – A Guide to their Identification:* 90) states that this species does not appear to have been recorded by day in Britain. I have taken two specimens, both by day: the first sitting on low vegetation in bright sunshine at Tregantle, Cornwall during the afternoon on 20th

August 1974. The second I disturbed from rough ground near Beaulieu Road Station, New Forest, Hampshire in the late afternoon on 19th September 1980.

Bretherton in a review of British records of *D. ramburialis* (*Ent. Rec.* **74**: 1-8) lists five specimens found or disturbed by day between 1858 and 1902, states that the species was not recorded between 1903 and 1944 and that between 1945 and 1961 although over thirty specimens were recorded none was found by day. Apart from my specimens I do not know if the species has been found by day since. — R. J. HECKFORD 67, Newnham Road, Plympton, Plymouth.

LYCIA LAPPONARIA SCOTICA (HARRISON) : A BRIEF NOTE ON PAIRING IN CAPTIVITY — I bred a few specimens of the Rannoch brindled beauty from a female collected at Struan, Perthshire during April 1983. These moths emerged during the afternoon in late March, 1984 in a sun lounge, under fairly normal temperature conditions. At about 1700 hrs. a male became active and flew wildly about the room. I boxed the moth and placed it near a female which had earlier extended its ovipositor by some 10mm. The male immediately ran over the female's back, and pairing occurred. The moths remained together until about 2200 hrs.

I have never observed *lapponaria* on the wing during many searches of the posts and birch trunks in the afternoon at Struan, or ever found moths paired during daylight hours. I would welcome any futher observations readers may have made. J. PLATTS 11 Maydowns Road, Whitstable, Kent.

A FEW NOTABLE 'MICROS' AT LIGHT IN S. E. LONDON. — Though they include nothing really rare, the following are species which I had not previously seen here or elsewhere, and which seem unexpected in a more-or-less built-up suburb. Single specimens came to my m.v. lamp at Charlton (1976, 1986). For determinations I am grateful to Messrs. E. C. Pelham-Clinton, A. M. Emmet, and J. M. Chalmers-Hunt.

*Bactra robustana* Chr.: a fine example on 17.viii.86. (The genus is barely represented at all here.)

*Eucosma tripoliana* Barr.: 11.viii.86. There is no saltmarsh known to me within several miles; I have, however, taken occasional singletons of other such species here or at Blackheath (e.g. the last, and once *Bucculatrix maritima* Stt.).

*Eucosma conterminana* H.-S.: 4.vii.76. Bradley, Tremewan & Smith (1979) note this as "generally scarce and local"; of the 9 localities they list, Erith and Dartford are the nearest.

*Teleiodes alburnella* Zell.: 15.vii.76. A northern species which has spread southward in the last decade or so. There is a birch at

the end of the garden on which it may have bred, but perhaps this is rather unlikely since it has not so far recurred.

*Ptocheuusa paupella* Zell.: 3.vii.76. If it bred locally, it must have been on one of the less usual foodplants, *Centaurea* or *Mentha*.

*Caloptilia populetorum* Zell.: 17.viii.86. Evidently a rarity here.

In passing I would mention that *Epiphyas postvittana* Walk. is now well established in this district since I recorded the first Kent specimen in 1983, occurring freely in both broods, but hitherto always at light. – A. A. ALLEN.

FIRST RECORD OF A MELANIC ANATIS OCELLATA L. (COL.: COCCINELLIDAE). – For some time I have had in my collection an example of this well-known species, the 'Eyed Ladybird', with the data 'St. Plant, Bovey, S. Devon/7.5.55/L. H. Woollatt', which is entirely pitch-black, without a trace of lighter areas on the elytra or elsewhere either above or below. I had paid it little attention until finding lately, to my surprise, that no such all-black form of *A. ocellata* appeared to be mentioned in either British or foreign works. This negative finding was verified by Mr. R. D. Pope who very kindly searched the collections and relevant literature at the BMNH. He points out that the nearest known approach to full melanism seems to be made by the ab. *friebi* Mader, in which a great extension of black or dark markings obliterates much (but by no means all) of the pale elytral ground-colour. That the blackness of the Devon specimen is no artefact caused by impregnation with grease is proved by its being quite unaltered after prolonged degreasing. – A. A. ALLEN.

EMPIS VOLUCRIS WIED. (DIPT.) IN SURREY. – When collecting in Richmond Park on 7th July, 1986, in the company of Prof. J. A. Owen, I tubed two Empid flies out of my friend's net after he had been sweeping the lower branches of well-grown Scots pines along the edge of a plantation; the flies, both males, came off different trees. They were readily identified from Collin (1961, *British Flies* **6** (Empididae): 451, 544-5) as the above apparently rare and little-known species, whereof they clearly exhibit all the characters given. Collin (p. 545) records *Empis volucris* only from the New Forest and from Waterperry Wood on the Oxon./Bucks. border, mostly in July, and I have no note of any later capture. – A. A ALLEN.

# Current Literature

**The natural history of butterflies** by **John Feltwell.** 133pp. 24 figs. 20 colour photographs. Croom Helm 1986. £7.95 paperback, £12.95 boards.

At last a butterfly book with a difference! Written with the general naturalist in mind this book combines a wealth of information with an easy, narrative style.

Ranging over fossil butterflies, collectors past and present, structure, life cycles, foodplants, colour and camouflage, habitats, butterflies and sunshine, population and territory, migration and conservation, Feltwell presents his views on the natural history of European butterflies – occasionally idiosynchratic but always stimulating. The book is well presented, with attractive figures and eight pages of colour photographs (some a little out of focus). It is some time since the reviewer actually *enjoyed* reading a new book from cover to cover! PAUL SOKOLOFF.

**Ladybirds in Dorset** by **Adrian Moon.** 24pp numerous line drawings. Paperback. 1986. Price £2.75. Available from Dorset County Museum, High West Street, Dorchester.

Following an introductory treatment of the general characteristics, life history and folklore of ladybirds, an illustrated key to the ladybirds likely to be found in Dorset is provided. Seven "plates" illustrate line drawings of selected species.

The limitations of black and white illustrations for insects showing considerable colour variation are obvious, but the keys do work reasonably well. It is a great pity that only 28 of the 43 species of British coccinellids are featured although this is, of course, quite reasonable for a publication devoted to a particular county. In view of the dearth of good literature on British ladybirds, this small volume is a good buy. We hope that the author can be persuaded to use his obvious talents to produce a similar work covering all the British species. PAS.

**The Moths and Butterflies of Great Britain and Ireland** edited by **J. Heath** and **A. M. Emmet.** Vol. 1 Micropterigidae – Heliozelidae; Vol. 2 Sphingidae – Noctuidae (part); Vol. 3 Noctuidae (part) and Agaristidae. Limp editions. Price £24.95 per volume. Harley Books, 1986.

The first three published volumes of this successful series have now been issued in a limp format. Each volume is sewn and bound in a durable laminated cover printed in colour with the original dust-wrapper design. The text and plates are reproduced exactly as the original hardback versions. Previous reviews in this Journal are: Vol. 1 **88**: 237-338; Vol. 2 **92**: 155-156 and Vol. 3 **96**: 290-292. The reasonable price of these new editions should make them far more attractive to the practicing lepidopterist. We understand that limp editions will be produced approximately two years after the hardback version.

**The Geometroid Moths of North Europe** by **Peder Skou.** *Entomonograph* **6.** 348pp 358 line drawings and half-tone illustrations. 24 colour plates hardback. E. J. Brill/Scandinavian Scientific Press, 1986. Price 220 DFL. (approx. £68).

This volume deals with the Drepanidae, Thyatiridae and Geometridae of northern Europe, and can be viewed as a successor to Skat Hoffmeyer's *De danske malere.* Each species is briefly dealt with under the headings of description, range, habitat, flight period and biology. The text is accompanied by numerous photographs of larvae and habitats, and large-scale line-drawings which clearly show distinguishing features of the wing pattern of selected species (especially useful for the *Eupithecia*). There are also selected drawings of genitalia – those of the *Eupithecia* being comprehensively figured (drawn by Rob Dyke from preparations made by David Agassiz). Tables give the detailed distribution region by region for the four Scandinavian countries, with recorded occurrances of the species in Britain, Ireland, Estonia, Latvia, Lithuania, Poland, Germany and the Netherlands. Moths are photographed against a blue background with captions printed opposite. Full data is given for each of the specimens figured. A biliography is also included.

This work was originally published as part of the series *Danmarks Dyreliv* (**2**: 1-332) and this English edition is warmly welcomed. Although our own literature provides good coverage of British species, this volume gives an additional perspective on biology and distribution, as well as figuring insects not (yet?) on the British list. The serious student of the macrolepidoptera will once again have to dig deep into his pocket. PAUL SOKOLOFF.

**An indexed list of British butterflies and moths** by **J. D. Bradley** and **D. S. Fletcher.** vi+119 pp. paperback. Kedlestone Press (1986) £6.00.

The names and apparent inter-relationships between insects evolve at a pace many orders of magnitude greater than the insects themselves, and the entomologist is frequently faced with the problem of an unfamiliar name in print, or the need to assign a modern name and author to an existing insect. In this respect, the publication of *A recorders logbook or label list of British butterflies and moths* by the above authors in 1979 (still in print) was an excellent update on Kloet & Hinck's *Check List.* The subsequent publication of an index in 1983, despite a number of errors therein, provided a speedy way of finding ones way around the *Log Book.* The current work sets out to combine modern nomenclature with an index to both the scientific and trivial

names, retaining the numbering system used in the *Log Book*. It is not intended for use as a label list, and the typeface is, perhaps, rather unattractive for this purpose – although perfectly adequate for the task in hand.

Given that a volume such as this is much needed and potentially very useful, the reviewer was sorely disappointed to find the text riddled with errors. Inaccuracies occur in the assignation of both trivial names and authors; the spelling of scientific names and authors names and in the omission of species – the most obvious example of the latter being the deletion of species 1753-1766.

There are far too many errors to correct in a short review, but to give a few examples from amongst the macrolepidoptera: 1724 *spadiciaria* (=*spadicearia*); 1981 *goosensiata* (=*goossensiata*); 1719 oblique striped (=oblique carpet); 2019 scarce chocolate-tip (=chocolate tip); 1966 *Furcula* Linn. (=*Furcula* Lam.); 2190 *gothica* D. & S. (=*gothica* Linn.). Further errors occur in the indices, and the list of author's names. There are also some inconsistencies in the use of an asterisk (to denote doubtful species and adventives) – for example whilst *Pontia daplidice* is so marked, species such as *Actinotia polyodon* and *Acontia lucida* are not.

Despite these many faults the substance of the book is worthwhile, particularly for the microlepidoptera where many name changes have occured recently. It cannot, however, be recommended as a source book for entomologists wishing to check spellings or authors prior to publishing. PAUL SOKOLOFF.

[Since this review was written, an extensive list of corrections, to both this publication, the *Log Book* and Kloet and Hincks has been published – see Emmet, A. M. 1987. Addenda and Corrigenda to the British List of Lepidoptera. *Entomologist's Gaz.* **38**: 31-52. Ed.]

**Butterflies and Moths of Derbyshire. Part** 2 by **F. Harrison** and **M. J. Sterling.** 135pp. Paperback. Derbyshire Entomological Society 1986. Price £5.50.

Part two deals with the larger moths (Families Lasiocampidae – Noctuidae). The main text is preceded by four separate tables listing Extinct Species, Twentieth Century Colonists, Endangered Species and Species Currently on the Increase, and an index and map of Principal Survey Sites for Derbyshire Lepidoptera 1960-1985. The main text which runs to 199 pages covers each species giving status, times of appearance, distribution and other relevant information. Pages 142-147 depict black and white photographs of some of the localities mentioned. There is no index which is a pity as in a subject in which the taxonomic order seems to be forever changing it is useful to be able to locate quickly individual species of

personal interest; perhaps an index covering all parts could be included in the forthcoming part three.

Taken as a whole the book is well printed, has a concise and clear layout and has few typographical errors. A few of the scientific names have been misspelt and those noticed by the reviewer are *Saturnia pavonia* Linn. p. 81, *Electrophaes corylata* Thunb. p. 102, *Perizoma bifaciata* Haw. p.108, *Lomographa bimaculata* Fabr. p.132 and *Syngrapha interrogationis* Linn. p.200. Two inconsistencies in the format should be mentioned, one relates to the abbreviation of Denis & Schiffermuller which is mostly given as "D & S", but occasionally as "Schf" (pages 158-160) and sometimes as"D-S", (pages 166-167); the other involves the treatment of trinomial names as the following three different examples show: "*Heliophobus reticulata* ssp. *marginosa* Haw" p.163, "*Lithophane ornitopus* Hufn. ssp. *lactipennis* Dadd" p.173 and "*Amphipyra berbera svenssoni* Fletcher" p.183.

One criticism concerns the time of appearance given which in a book on Derbyshire moths should relate to the flight times in that county; when the adult flight period is stated for species which have only been recorded in the larval state or as a single speimen this is clearly not so. One outstanding example of this gives *Idaea trigeminata* Haw. as being bivoltine; principal flight period mid-June to mid-July; partial second generation late July/August yet only one specimen has been recorded. Even if this species was found to be resident it is unlikely that a second generation which only occurs very occasionally in the most southerly parts of Britain would occur in the Midlands. Another anomaly gives *Ligdia adustata* D. & S. as being bivoltine; flight periods late May/June and August even though all but one of the dates of all the Derbyshire specimens are stated; these range from 30th June to 17th July which suggests it may well be only single brooded as it is in other parts of its northerly range. *Scopula floslactata* Haw. is also stated to be bivoltine which makes the habits of this species in Derbyshire unique as in the rest of the British Isles or even Europe for that matter it is considered to be univoltine.

Coverage of variation is reasonably comprehensive with reference being made to most of the local forms, usually melanic, found in the County. Perhaps mention could have been made of the melanistic tendency of species such as *Colostygia multistrigaria* Haw., *Polia nebulosa* Hufn. and *Eupsila transversa* Hufn. which in some Derbyshire localities is as pronounced as one will find anywhere in the British Isles.

Despite these criticisms which in all fairness relates to but a few species this work is an important and up to date document on the macro-moths of Derbyshire and is highly recommended to all lepidopterists. BERNARD SKINNER

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# ABERRATIONS OF BRITISH LEPIDOPTERA

By B. K. WEST, B.Ed.*

The numbering of the specimens is coincidental with that of the accompanying figure. All the specimens described are in the collection of B. K. West.

1 *Opisthograptis luteolata* L. ab. *nebulata* **ab. nov.**
Forewing: yellow; antemedian fascia well marked, ochreous, and area basal to this suffused greyish-brown. Discal spot normal; subapical blotch distinct, and from it to dorsum is a conspicuous zigzag postmedian fascia, shaded outwardly to form a greyish-brown irregular band. Central and marginal areas clear yellow. Hindwing: yellow, central macule prominent, and postmedian and central lines well developed.
Type: Dartford, Kent, 7.vi.1979, B. K. West.
A rare but distinct and readily identified form of which two other speciemens are known to me. One, Labelled Mull, Oct. 1877 is in the National Collection, and the second taken by R. I. Lorimer at Totteridge, Herts. in 1963 is depicted in the volume for that year of the *Proc. S. Lond. ent. nat. Hist. Soc.*

2 *Chesias rufata* Fab. ab. *obliterata* **ab. nov.**
Forewing: pale grey, slightly darker basally, and darker distal to barely visible postmedian fascia (normally distinct and dark brown at costal end), the dark shading interrupted by two pale terminal lines.
Type: Dartford Heath, Kent, 17.iv.1966, bred from feral larva by B. K. West.
Not represented in National Collection.

3 *Crocallis elinguaria* L. ab. *restricta* **ab. nov.**
Forewing: the dark transverse central band from costa terminates in centre of wing, and is represented by a dot on the dorsum.
Type: Dartford, Kent, 3.viii.1979, B. K. West.
This form is not represented in the National Collection, and is evidentally rare. It appears to be an extreme development from ab. *obviaria* Ljungdahl in which the transverse band terminates at a point at the dorsum, a not uncommon variety.

4 *Hada nana* Hufn. ab. *confusa* **ab. nov.**
Forewing: ochreous-grey; dark subspical blotch and subterminal fascia. Dark terminal fascia interrupted by paler veins, fringes similar. Dark markings basal to subterminal line vestigial,

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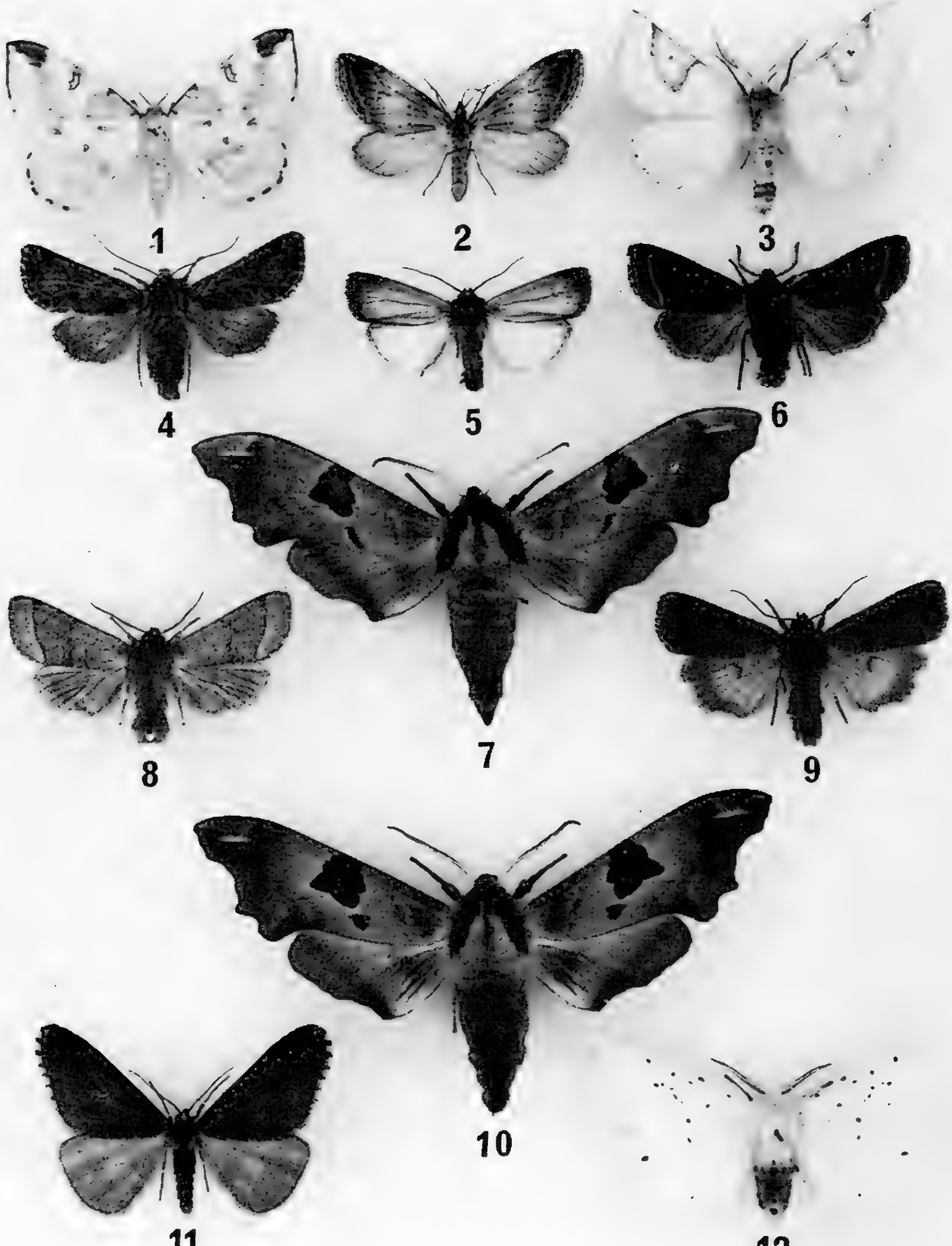


KEY – 1. *Opisthograptis luteolata* ab *nebulata*; 2. *Chesias rufata* ab *obliterata*; 3. *Crocallis elinguaria* ab *restricta*; 4. *Hada nana* ab *confusa*; 5. *Ochropleura plecta* ab *fenestrata*; 6. *Orthosia stabilis* ab *fumosa*; 7. *Mimas tiliae* ab *discifera*; 8. *Orthosia stabilis* ab *mediofusca*; 9 *Noctua comes* ab *postplumbea*; 10. *Mimas tiliae* ab *pseudobipunctata*; 11. *Erannis defoliaria* ab *anomala*; 12. *Spilosoma lubricipeda* ab *imperfecta*.

comprising mainly blackish distal edge of discal spot, and in line with this some dark scaling in interspaces 1b and 2. Veins paler as in normal *nana*. The vestigial dark markings cause a somewhat dappled effect.

Type: Graveney, Kent, 3.vii.1971, B. K. West.
Not represented in the National Collection which does contain specimens approaching ab. *obsoleta* Tutt– "ashy grey as typical, but without the dark markings round the stigmata, the whole being comparatively unicolorous." The two forms seem quite distinct.

5 *Ochropleura plecta* L. ab. *fenestrata* **ab. nov.**
Forewing: largely descaled. Apical blotch present, and normal brownish scaling is continued along the termen to a width of two to three mm. Basal to this is a paler zone of similar width, and this is continued to base of wing along costa and dorsum.
Type: Dartford, Kent, 27.vii.1977, B. K. West.
I know of no specimen resembling this. The form may be genetic corresponding with a similar aberration of *Gonodontis bidentata* Clerck.

6 *Orthosia stabilis* D. & S. ab. *fumosa* **ab. nov.**
Forewing: blackish brown, slightly reddish around stigmata, but stigmata black, distinct and outlined whitish. Submarginal line distinct, whitish. Veins crossing area between submarginal line and termen whitish. Hindwing: smoky.
Type: Aviemore, Inv., 12.iv.1971, B. K. West.
This is darker than ab. *suffusa* Tutt. I have seen no other specimen of *stabilis* as darker as this and it would appear to be an example of ancient melanism characteristic of non-industrial areas. I have seen no trend towards melanism in this species in N. W. Kent.

7 *Mimas tiliae* L.ab *discifera* Closs.
The specimen illustrated in which the costal blotch of the forewing encloses an area of ground colour was obtained from a feral pupa from Orpington, Kent; emerged 14.v.1974. The National Collection contains seven specimens, all from N. W. Kent, and all, including my specimen have whitish orange forewings and orange suffused hindwings.

8 *Orthosia stabilis* D. & S. ab. *mediofusca* **ab. nov.**
Forewing: the area between the central fascia and submarginal line appears darker due to heavier speckling. The ground colour is grey.
Type: Dartford, Kent, 20.iv.1971, B. K. West.
Curiously this banded form is distinctly uncommon, and the one described is the only one I have seen, although fig. 33, plate 30 in *Moths of the British Isles,* (Skinner 1984), would seem to depict this form.

9 *Noctua comes* Hubn. ab. *postplumbea* **ab. nov.**
Hindwing: greyish yellow; border and lunule blackish with grey sheen; veins distinct, greyish; entire wing has pronounced sheen.
Type: Forres, Moray, 6.viii.1963, B. K. West.
Paratype: Findhorn, Moray, 14.viii.1971, B. K. West.
The type specimen has forewings reddish, the paratype greyish. I have seen other specimens in collections, all are from the Highlands of Scotland, and vary in the intensity of the greyish sheen.

10 *Mimas tiliae* L. ab. *pseudobipunctata* Lempke.
Forewing: costal blotch present; second spot is separated from inner margin. The specimen illustrated is a male which emerged from a feral pupa from Orpington, Kent, 4.v.1982. A distinct and readily identified form which seems to be rare; there are two bred specimens in the National Collection labelled Southend, Essex, 1940, H. B. Williams.

11 *Erannis defoliaria* Clerck ab. *anomala* **ab. nov.**
Forewing: blackish brown; discal spot black, fringe chequered dark brown and whitish. Hindwing smoky, fringe pale.
Type: Dartford Heath, Kent, 4.xii.1976.
My series of melanic *defoliaria* from Chingford, Essex, appear identical except that the fringes of the forewings are uniformly dark as are those of the hindwings. Both forms are present in the National Collection, and in the case of the former the chequered fringes vary considerably in their depth of contrast.

12 *Spilosoma lubricipeda* L. ab. *imperfecta* ab. nov.
Forewing: Spotting is confined to the basal two-thirds of the wing, with the exception of occasional minute dots.
Type: Dartford, Kent, 26.vi.1980, B. K. West.
Paratypes: Dartford, Kent, 24.vi.1972, B. K. West,
Orlestone, Kent, 20.vi.1984, B. K. West.
This is a not uncommon form, and in all the specimens I have seen the forewing spotting has been light, and there has been some trace of minute dots to be seen with a hand lens in the outer area of the forewing.

**Acknowledgements**

I wish to thank Mr. David Wilson for the excellent photographic illustration, and Mr. D. Carter of the British Museum (Natural History) for granting permission for me to examine the National Collection and relevant literature.

# JOHN FRANCILLON F.L.S. FURTHER FACTS

By C. MACKECHNIE-JARVIS*

I have read with interest the note by my erstwhile correspondent Lt. Col. Cowan on John Francillon and as he does not name the prime source of his information, may I plead guilty?

The reference to John Francillon formed a small part of my Presidential Address to the British Entomological and Natural History Society and appeared in the Proceedings for 1976 but I believe I am the first person to refer in print to the fact that he was of Huguenot descent. I found very little concerning Francillon in the extensive archives of the Huguenot Society, of which I am a Fellow and so sought out a collateral descendant, Mr. John Francis Francillon, a solicitor, who lamentably died in July 1976 at the early age of 56.

Mr. Francillon very kindly sent me a copy of some family correspondence with relatives in Switzerland and an extensive pedigree, part of which I published, acknowledging the sources upon which I had drawn. John, the entomologist, is as Col. Cowan says "a name on a chart" without reference to his profession or interests but the date of death given thereon as 1818 is incorrect and I am in error in quoting it. From another source I had a note that our John was a goldsmith but as Dr. Hagen working prior to 1862 (commencement of the publication of his *Bibliotheca Entomologica*) and much closer to the events, described John Francillon as a doctor, I followed Hagen and again was wrong. I accept that John was not a Doctor and I have already acknowledged this in a Review of *Natural History Auctions* By J. M. Chalmers-Hunt which appeared in the A. E. S. *Bulletin* 1977 p.83.

Cowan refers to the 1780 H. A. C. reference as a "breakthrough" and speculates at length on possible reasons for Francillon's enlistment in October 1780. If, however, he resigned in 1780 his military career was of very short duration and hardly justifies the comment. 19th Century Wills are fully indexed and readily available for inspection at the Record Office in Chancery Lane with a delay seldom exceeding 15 minutes. The I.G.I. Records of Marriages and Christenings are on "open access" at the Guildhall Library and contain the information he gives concerning the children of the second marriage. Col. Cowan asks about John's first wife. The family papers name her as Mary Kilburn. Hers is just another "name on a chart" and I cannot vouch for it. No children of this marriage survived and I did not quote it.

*The Granary, Milford Mill Road, Salisbury, Wilts.

Finally, The dates given for Sydenham T. Edwards are not those in the D.N.B. and should be 1769 - 1819.

### References

Cowan, C. F. (1986) John Francillon, a few facts. *Entomologist's Rec. J. Var.* **98**: 139-143.

Dictionary Of National Biography (1917) vol. VI p.544.

Hagen, H. A. (1862) *Bibliotheca Entomologica*.

MacKechnie-Jarvis, C. (1975) Presidential Address *Proc. Trans. Br. ent. nat. Hist. Soc.* **9**: 91-112.

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EUPHRANTA TOXONEURA LW. (DIPT.: TEPHRITIDAE) IN WEST KENT. — On 7th June, 1986, on a piece of marshy ground on the Welling side of Shooters Hill opposite the eastern margin of Oxleas Wood, I swept an unfamiliar and distinctive-looking Tephritid fly from grass and mixed herbage under some willows (*Salix fragilis* L.). It proved, as I suspected, to be the above rarity, better known under the generic name *Rhacochlaena* (which however is now considered a subgenus of *Euphranta* — See White, I. M., 1986, *Ent.mon.Mag.* **122**:148). I have seen no previous record for W. Kent, nor indeed for Kent at all, but in the London district there is one for Hampstead Heath, Middx. (Niblett, M., 1956, *The Flies of the London Area*, **3**, Trypetidae: 83 — *London Naturalist* Reprint 101). This scarce and elusive insect has been associated in the past with willow trees, having sometimes been found sitting on the trunks, but the scattered British records are often uninformative and the foodplant was unknown until recently. However, in conversation with Dr. Ian White I learn that *E. toxoneura* has been shown to develop in the galls on willow leaves caused by sawflies of the genus *Pontania*, a fact that fully accounts for the situation of the present capture and others. — A. A. ALLEN.

GLAUCOPSYCHE MELANOPS (BOISD.) (LEP.: LYCAENIDAE) IN CORFU — Whilst on holiday in Kassiopi, Northern Corfu, in late April 1986, I discovered a small colony of the black-eyed blue butterfly. The site was a ruined crusader fort on a limestone headland. The site was covered in flowers, and totally neglected, with the fort walls providing a good windbreak. One female was observed to lay a single egg on the abundant shrub *Spartium junceum* (also the foodplant of the local holly blue). Both Higgins and Hargreaves in *A field Guide to the Butterflies of Britain and Europe*, and Bretherton in *Trans. Soc. Br. Ent.* **17**: 1-9 describe this butterfly as a resident of western Europe, with the most easterly part of its range being northern Italy. J. A. D. SMITH, Leas View, Epsom Road, West Horsley, Surrey.

# THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1982, 1983, 1984 AND 1985

## A SUPPLEMENTARY NOTE

By R. F. BRETHERTON* and J. M. CHALMERS-HUNT**

Since the reports on immigrations of these years were written additional records have been received or have otherwise come to light. These may now be added, as below, to the main reports in *Entomologist's Rec. J. Var.* **95**: 89-94, 141-152; **96**: 85-91, 147-159; **97**:140-145, 183-185, 196-202, and to the previous supplementary report *ibid.* **97**:76-94.

### 1982

*Additions* to Annexe II – Scarce immigrant species:

**Rhodometra sacraria** L. ESSEX S. Grays, 8.9 (Agassiz in Plant, *Lond. Nat.* **65**: 23) HERTS. Welwyn, 18.5 (Waterton in Plant. *ibid.*) MIDDLESEX Ickenham, 26.9 (Rough & Weaver in Plant, *ibid.*)

**Agrius convolvuli** L. BERKS. Binfield (Bunker, *Bull. amat. Ent. Soc.* **42**:37). KENT W. Dartford, 30.9, male on gate post (B. K. West in Plant *Lond. Nat.* **65**: 24)

**Acherontia atropos** L. MIDDLESEX Ickenham, 26.9 (Rough & Weaver *ibid.* **62**: 123). SURREY Wandsworth, 7.9 (Messenbird in Plant *ibid.* **65**: 25) WORCS. Tenbury Wells, August, found in bee hive. (Mrs. Hoyer per E. J. Green).

**Spodoptera exigua** Hubn. ESSEX S. Grays, 23.7, two (Agassiz in Plant, *ibid.* **65**:28).

Of the usually common butterflies, the range in Scotland of *Colius croceus* Fourc. was extended by records of one seen in Fife on the Isle of May on 3.6 and of several at Dunfermline in early August (P. K. Kinnear). There were also many further accounts of *Cynthia cardui* L. These were mainly near the south coast, as at Shaftsbury, Dorset, where larvae were found on August 22 and 28 and 20 adults were counted on buddleia in a garden on October 3rd. Also reported singly at Keepham, Norfolk and Hexham, Northumberland, August 31st. Further records of *Macroglossa stellatarum* L. added Buckinghamshire, Caernarvon, Glamorgan, Herefordshire and Somerset to the counties where it was previously reported, and it was also seen in Guernsey.

*Folly Hill, Birtley Green, Bramley, Guildford, Surrey.
**1 Hardcourts Close, West Wickham, Kent.

**1983**

*Add* to Annexe II – Additional species;

**Sceliodes laisalis** Walker. BEDS Luton, 30.7 (K. F. Webb). SURREY Wimbledon, 18.7 (Sir John Dacie). Also Editorial note; 2nd and 3rd British records, probably immigrants. (*Ent. Rec.* **96**: 123).

**Colias hyale** L. or **C. australis** Verity. GLOS. S. St. inchcombe Hill, male 23.7; Saltford railway station, 5.9, (A. Meadowcroft, W. Duckworth per C. J. Carey, Bristol Regional Environmental Centre).

**Nymphalis antiopa** L. ESSEX S. Epping town centre, 14.7 (B. W. Castle); Roding Valley near Loughton, late July (Mrs. M. Chalke in Plant, *Lond. Nat.* **64**: 48)

***Nymphalis polychloros** L. HERTS. Bushey, early in spring (per French); Radlett, 29.5, very fresh on buddleia (B. Wildridge in Plant *ibid* **64**: 48).

**Cyclophora puppillaria** Hubn. ESSEX S. East Tilbury, 1983 (Emmet & Pyman in Plant *ibid.* **65**: 23).

**Rhodometra sacraria** L. DORSET Preston, 8.11, 9.11 (M. Cade); GLOS. S. Clifton Suspension Bridge (W. Duckworth per C. J. Carey) KENT W. Charlton, 4.6, female, 17.6, male (A. A. Allen in Plant *ibid.* **64**:53); West Wickham, 25.8, two males; Bromley Common, 26.8; LINCS N. Messingham, 8.9, eight; Scotton Common, 23.9, two (per J. Duddington). MIDDLESEX Hampstead, 25.7 (P. R. Hall in Plant *ibid.* **64**:58); Potters Bar, 19.9 (R. Lovell-Pank in Plant *ibid.*) SURREY Putney, 1.10 (Sealey in Plant *ibid.* **65**:23). CO. OFFALY, 24.8, two; CO. WICKLOW, 21.5 (per R. F. Haynes).

**Orthonama obstipata** Hubn. MIDDLESEX Hampstead, 25.7 (P. R. Hall in Plant *ibid.* **64**: 59).

***Euproctis chrysorrhoea** L. MIDDLESEX Buckingham Palace garden, 13.7, c.24 in trap, all males (J. D. Bradley in Plant *ibid.* **64**: 52). SURREY Thorpe, 13.9 (P. J. Baker *Proc. Trans. Br. ent. Nat. Hist. Soc.* **19**:45).

**Spodoptera littoralis** Boisd. BERKS. Longworth, late June, very worn, in trap. Identity *teste* D. J. Carter (A. Kennard *Ent. Gaz.* **36**:180).

**Lithacodia deceptoria** Scop. SUSSEX E. Peasmarsh, 16.7 (T. Scott, AES Exhibition 1984)

**Heliothis peltigera** D. & S. MIDDLESEX Hampstead Garden Suburb, 9.7 (R. T. Lowe in Plant *Lond. Nat.* **64**: 59).

Further records of *Macroglossa stellatarum* add Cambridgeshire, Worcestershire and Yorkshire VC 61 to the numbers of English and Welsh counties; but in Ireland only six were reported from Co. Kerry, Co. Waterford and Co. Wexford.

## 1984

*Add* to Annexe I – Names of direct recorders;

J. D. Barrence, D. A. Chambers, C. B. Collins, B. O. C. Gardiner, S. M. Jackson, J. Owen, A. Kennard, E. C. Pelham-Clinton, R. W. J. Read, G. Senior, Dr. S. Sutton.

*Add* to Annexe II – Addititonal species:

**Costaconvexa polygrammata** Bork. JERSEY, 25/28.8, in Rothamstead trap (A. M. Riley, *Ent. Gaz.* **37**:68). Possible immigrant, with other species at that time. The last British record is Cambridge, 1879, a specimen in the Hope Coll. at Oxford.

**Thaumetopeia processionea** L. JERSEY, 20/21.8, in Rothamsted trap (A. M. Riley, *Ent. Rec.* **98**:146). Probably 3rd British record. Possibly immigrant.

**Cyclophora puppillaria** Hubn. DORSET, Durlston Head, Swanage, 1.11 (P. J. Baker, *Proc. Bri. ent. nat. Hist. Soc.* **17**:89).

**Catocala sponsa** L. DEVON S. Sidmouth, 24.8, 27.8, in trap, both worn. (A. Kennard, *Ent. Gaz.* **36**: 173). HANTS S. Southsea, 2.8, in trap (J. R. Langmaid, *Ent. Gaz.* **36**:30). Possibly immigrant, known places of residence being distant.

*Add* to Annexe II – Additional records;

***Papilio machaon** L. ESSEX S. Walthamstowe, early July, race not specified (Jacobs in Plant *Lond. Nat.* **65**:21). Possible immigrant.

**Nymphalis antiopa** L. HERTS. Hailey Lane, 19.9 (F. Earl in Plant *Lond. Nat.* **64**:48). MIDDLESEX Isle of Dogs (Murdoch in Plant *ibid.* **65**:22). WILTS. N. Luckington, early September, on rotten apples (J. Thomson-Glover, *Bull. amat. Ent. Soc.* **45**: 61). WORCS. Himbleton Manor, near Droitwich, 10/13.9, visited apples and honey in kitchen, closely seen (Cynthia, The Lady Sandys per J. E. Green).

**Rhodometra sacraria** L. DEVON S. Sidmouth, 25.8, (A. Kennard *ibid.*) ESSEX S. Coxtie Green, 2.9, (Wanstall in Plant *Lond. Nat.* **65**:23). Co. WICKLOW Bray Head, 25.8, (R. F. Haynes, *I.N.J.* **21**: 506).

**Agrius convolvuli** L. CORNWALL W. Coverack, 20.9. SOMERSET N. Lympsham, 13.9 (E. C. Pelham-Clinton).

**Acherontia atropos** L. DORSET Durlston Head, Swanage, 1.11 (P. J. Baker *Proc. Trans. Br. ent. Nat. Hist. Soc.* **17**:89). HUNTS. Wiston, 12.9, two larvae in potato field (M. S. L. Simpson *Bull. amat. Ent. Soc.* **44**:25).

**Eilema caniola** Hubn. KENT E. Greatstone, 24.8 (S. Clancy *Ent. Rec.* **99**:58).
**Lymantria dispar** L. JERSEY 31.7/1.8, in Rothamsted trap (A. M. Riley *Ent. Rec.* **98**: 146).

Of the commoner species we now have records of *Colias croceus* Fourc. from St. Mary's Scilly, 14.10, two and Thorney Island, West Sussex, four; of *Cynthia cardui* L. from Hardwick, Cambs., 1.9; and of *Macroglossa stellatarum* L. in the north at Bentham, Yorkshire, and Gordon, Berwickshire. In Ireland 122 were reported, with the greatest concentration (59) in Co. Waterford (R. F. Haynes, *I.N.J.* **21**:505).

## 1985

*Add* to Annexe I – Names of recorders:

V. M. Albertini, J. Badmin, A. S. Boot, M. Cade, G. J. Carey (Bristol Regional Environment Centre), D. A. Chambers, P. K. Kinnear, E. T. Lèvy, S. Nash, C. W. Plant, M. Rodgers, S. Swanson, P. Q. Winter, M. R. Young.

*Delete* from Annexe II – Scarce immigrant species:

under **Rhodometra sacraria**, Co. CORK W. 9.10, 12.10, two (MGWT).

*Add* to Annexe II – Scarce immigrants, as additional species:

**Euchromius ocellea** Haw. YORKS. VC 63, Netherton, 16.10 (H. E. Beaumont *Ent. Rec.* **98**: 212).
**Sceliodes laisalis** Walker. LEICESTER 29.7.1979, one in garden trap. Identified 1986 by M. Sterling (D. F. Owen *Ent. Rec.* **98**: 203). Second British capture.
**Palpita unionalis** Hubn. HANTS. Isle of Wight. Freshwater, 14.10 (*Proc. Trans. Br. ent. Nat. Hist. Soc.* **19**:59).
***Nymphalis polychloros** L. BUCKS. near Rickmansworth, 21.7 (Anderson per A. M. George in Plant *Lond.Nat.* **65**:22). SUFFOLK E. near Woodbridge, 1985, photographed by G. Padfield. (Mendel & Pietrowski, *Butterflies of Suffolk*, p.89).
**Nymphalis antiopa** L. SUSSEX E. Nutley, Ashdown Forest, 24.7 (Mrs. Hope per D. Dey). SUFFOLK E. Sibton, early spring, four wings found in work-room. (Mrs. M. Wells in Mendel & Pietrowski, *ibid.* **92**).
**Rhodometra sacraria** L.BERKS. Fernham, 18.9, two, 20 & 24.9 (S. Nash); Uffington, 22.9, 26.9 (E. W. Classey *Ent. Gaz.* **37**:61); DEVON S. Axminster, 9.10, two (E. C. Pelham-Clinton). KENT W.

East Malling, 25.9, 26.9 (D. A. Chambers). SOMERSET N. Knowle, 25.7; Weston-in-Gordano, 24.9 (per G. J. Carey).

**Agrius convolvuli** L. Co. ARMAGH, one (R. F. Haynes *I. N. J.* **22**: 113). Co. WEXFORD, one (*ibid.*).

**Acherontia atropos** L. Co. Down, June (R. F. Haynes *ibid.*)

***Euxoa cursoria** Hufn. ESSEX N. Dovercourt, 22.9 (M. Anthoney per B. Skinner).

**Mythimna loreyi** Dup. Co. CORK W. Cape Clear Island, 9.10, 12.10, two (M.G.W. Terry).

**Spodoptera exigua** Hubn. BERKS. 27.7, 29.7, 6.8 two, 13/28.8 five (S. Nash). KENT E. Dungeness, 5.10 (D. E. Wilson). KENT W. East Malling, 24.7 (D. A. Chambers).

**Heliothis peltigera** D. & S. BERKS. Fernham 16.7 (S. Nash); KENT E. Selling 19.7 (S. Nash).

There are also important additional records of commoner species, especially from the almost daily log of sightings at Portland Bill bird observatory, Dorset. For *Cynthia cardui* this gave a total of 48 during the April immigration, also sudden increases in numbers from May 26 and 30, in the last days of August and in mid September, and finally on October 14th, which agree with other indications of large influxes around these dates. During the whole year some 770 *cardui* were noted there. We also now have records of good numbers of adults and some larvae at Muston, on the coast of Yorkshire, and further north of two seen by bird-watchers on the Isle of Canna, Inner Hebrides, on July 12th. In Ireland the total noted in the year was nearly 1300; but most of these were at Cape Clear Island and elsewhere in the south west, with a small penetration northwards to Co. Down. In contrast, however, of *C. croceus* only three can be added to the British records, all at Portland Bill on April 4th and September 19th and 21st; and in Ireland the "pitiful" total for the year was three, in Co. Kilkenny and Co. Waterford (R. F. Haynes *I. N. J.* **22**: 113). For *V. atalanta* a record of one at Wendens Ambo, North Essex on April 18 may be added.

Of the commoner moths, the few additional records confirm that *Peridroma saucia* was not uncommon at Portland, Dorset and Trebrownbridge, East Cornwall August to October; but it was hardly seen elsewhere. Of *Autographa gamma* there was a notable maximum of 72 on October 12 at Portland Bill, but, though it occurred regularly there from May 18 onwards, it was otherwise never really numerous either there or at Axminster, South Devon. *Agrotis ipsilon* improved its numbers somewhat in the autumn, but also nowhere became common, and the same was true of *Udea ferrugalis*. There were a few additional records of *Macroglossa stellatarum* from Dorset and Kent in August, and a surprising one seen flying over a heather bog at Plockton, Wester Ross on June

19th, which is by far the most northerly British sighting. In Ireland only 18 were reported, mostly from Co. Cork.

These additions do not much alter the relative importance of the years: 1982 rather above average, 1983 outstanding both for numbers of species and individuals, 1984 generally poor, 1985 distinguished for its great April invasion, but later rather poor.

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EUPITHECIA LARICIATA FREYER (LEP.: GEOMETRIDAE), THE LARCH PUG, IN DUMFRIES-SHIRE – *E. lariciata* is widely distributed throughout Scotland but existing records are patchy and probably incomplete. This is illustrated well by the capture of several individuals in the Rothamsted Insect Survey light trap at Mabie, near Dumfries (O.S. Grid ref. NX951 707, Site No. 454) during 1986. *Lariciata* has not, to my knowledge, been previously recorded from Dumfries-shire.

This extension in the known distribution of *lariciata* is not surprising as the species is easily confused with several others of the genus *Eupithecia* and has almost certainly been overlooked. However, what is interesting about the present records is their lateness. The usual flight period is May and June (Skinner, B. 1984. *Colour Identification Guide to the Moths of the British Isles,* pp 47-48. Viking). However, only one individual from the 1986 Mabie records was caught during this period (7th June), 17 others being recorded between 12th July and 19th August. Whether this represents a strong second brood, (the possibility of a second brood in this species has been discussed before (Riley, A. M. 1986. *Ent. Rec.* **98**: 207-208)), or a markedly later flight period than known from other localities, is open to speculation at the present time.

Thanks are extended to Mr. P. Harrison for operating the trap at Mabie. – ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Hertfordshire, AL5 2JQ.

FOODPLANTS OF CACOECIMORPHA PRONUBANA HÜBN. – To add to the lengthening list of unlikely larval foodplants of this bright and lively Tortrix, I should like to report having bred it here from single larvae found feeding, one on a potted plant of *Chamaecyparis pisifera*, the other inside the corolla of a daffodil flower. It is certainly beginning to look as though the answer to M. Parson's question (*antea* 196) "Is there any plant this species will not eat?" might well prove to be "Only those few kinds rejected by all larvae" as being too tough or poisonous – if indeed there *are* any such. – A. A. ALLEN.

# *AGRILUS PANNONICUS* (PILLER & MITTERPACHER, 1783) (COL.: BUPRESTIDAE) AND OTHER NOTEWORTHY INSECTS RECORDED FROM HAMPSTEAD HEATH IN 1984

By A.P. FOSTER*

On the afternoon of 30th June 1984 a deformed adult *Agrilus pannonicus* (=*biguttatus* F.) was found sitting on the bark of a large oak stump on Hampstead Heath. The stump was evidently infested with this rare species, as the thick bark contained more than 600 exit holes. Two sections of the main trunk nearby also had workings of the beetle, though at much lower density, with approximately 60 exit holes in each log. Searches for more adults resulted in one fine specimen being found on adjacent vegetation and a further three being dug out of the bark on the stump, one live and two dead. Stephens (1839) records this buprestid from Hampstead, and the record is repeated in Fowler (1890) and Levy (1977). Allen (1973), who reviews the occurrence of *A. pannonicus* in Britain, also mentions this early record, though nothing further concerning the circumstances and date of capture appears to be known. As no subsequent records seem to have been published from the locality, it is a pleasure to report that this handsome and rare buprestid has continued to survive, undetected, in this area of north London for almost one hundred and fifty years.

Additional visits to the location resulted in further sightings of *A. pannonicus*: 3rd July, 8.30 a.m., one on vegetation beside trunk: 7th July, very hot sunny afternoon, two deformed adults on stump and five flying in the vicinity; 14th July, one adult on stump. Visits on 21st July and thereafter did not result in any further sightings, even in hot sunny weather. Attempts were made to net those specimens flying, but the beetles were able to avoid capture, and those individuals seen sitting on the bark dropped to the ground when approached. It is worth mentioning that on each of the above visits the vegetation was swept thoroughly, but no *A. pannonicus* were obtained; it would seem possible, therefore, that the beetles are alert enough to evade capture by this method.

Two of the specimens observed on the stump exhibited some interesting behaviour; intermittently opening their elytra and exposing the bright, iridescent blue tergites of the abdomen, which in clear sunlight resulted in a flash of bright blue colour. The two individuals concerned continued to do this for some minutes whilst walking over the bark. This may have merely been a result of failed attempts to fly, as both were partly deformed. Alternatively it may have been a form of sexual behaviour intended to attract other individuals of the species.

*Nature Conservancy Council, Northminster House, Peterborough

The exit holes of this beetle are quite distinctive, being almost semi-circular in cross section and in view of their size (approx. 3mm across) they are unlikely to be confused with those of any other species. As mentioned above, a large number of these exit holes were present, particularly in the stump, but not all were a result of the 1984 emergence; at least half appeared to be a year or more old. Many of the convoluted and flat tunnels of the larvae were present under the bark, showing that the larvae initially feed in the layer between the bark and the wood and then bore up into the bark to continue development and form a pupal chamber. Bily (1982) states that larval development takes two years. Buprestidae are sun-loving insects and it was no surprise to note that the majority of the larval workings and exit holes were on the south-facing, sun-exposed aspect of the stump and logs.

Standing oaks of similar age and size near to the fallen tree were examined for the beetle, but no other infestations were found in the immediate vicinity. However, on the 18th August another fallen tree some distance away, in the grounds of Kenwood House, was found to have approximately a dozen exit holes of *A. pannonicus.* This second tree, as well as the original, is within a Site of Special Scientific Interest, and it is encouraging that the park keepers do not remove large sections of dead wood in this area, thus favouring the survival of this rare beetle. It would seem possible that *A. pannonicus* is able to survive at low population densities for long periods of time, perhaps in the tree canopy, but when conditions are favourable it can temporarily become quite numerous.

Other noteworthy insects recorded at Hampstead Heath during 1984 were: COLEOPTERA: *Melasis buprestoides* (L.), elytron in beech log, 14th July; **Axinotarsus marginalis* (Laporte de Castelnau), few sweeping, 7th July; **Silvanus bidentatus* (F.), one under oak bark, 30th June; **Donacia crassipes* F., three on *Nuphar lutea* leaves on Viaduct Pond, 21st July. DIPTERA: *Platycheirus tarsalis* (Sch.) one 28th April; *Volucella inanis* (L.), two on thistle flowers, 18th August; *Chalcosyrphus nemorum* (F.), one on elm log, 9th April. In addition, Mr. R. Jones visited the logs containing *A. pannonicus* and recorded the following noteworthy Coleoptera: **Paromalus flavicornis* (Hbst), 16th October, under oak bark; **Phloiotrya vaudoueri* Muls., 18th July, under bark; **Platypus cylindrus* (F.), 18th July, crawling on stump, 16th October, under bark. Those species marked * are not included in a preliminary list by Buck (1952). My thanks go to Mr. R. Jones for allowing me to quote his records.

**References**

Allen, A.A., 1973. *Agrilus biguttatus* F. (Col., Buprestidae) at

Windsor; with some account of its history in Britain. *Entomologist's Rec. J. Var.* **85**: 12-14.

Bily, S., 1982. The Buprestidae (Coleoptera) of Fennoscandia and Denmark. *Fauna ent. scand.* **10**: 73.

Buck, F.D., 1952. Some Coleopterous records from Hampstead Heath. *Entomologist's Gaz.* **3**: 101-103.

Fowler, W.W., 1890. *The Coleoptera of the British Islands.* **4**: 70. London.

Levy, B., 1977. Coleoptera, Buprestidae. *Handbk Ident. Br. Insects* **5** (1b): 4

Stephens, J.F., 1839. *A manual of British Coleoptera*: 173. London.

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PARATILLUS CARUS NEWMAN (COL. CLERIDAE) IN THE OPEN AT WINDSOR. – This Australian clerid was first detected in Britain in 1933 in timber imported from Tasmania (Fisher, 1944 *Entomologist's mon. Mag.* **80**:132) and practically all of the subsequent British records have been of its occurrence in or near wood-yards, (or at least in built-up areas), usually in the company of *Lyctus* spp. on which it is parasitic. In view of this, it is perhaps of interest to record its occurrence in the open in Windsor Great Park where, on 2:vii:86, I found a specimen on some freshly cut oak logs under a somewhat blighted old oak tree. There were a few specimens of *Epursa* spp. on the cut surface of the logs but I could see no trace of *Lyctus* spp. on the logs or the tree from which the logs had arisen or on nearby oak trees.

This would appear to be the first definite record of the beetle at Windsor. Donisthorpe (1944 *Entomologist's mon. Mag.* **80**: 161) wrote that a beetle found in his study at Putney in 1933 and initially identified as *Denops albofasciatus* Charp. (Donisthorpe 1933 *Ent. Rec.* **45**: 164) was in fact an example of *P. carus.* He suggested that the source of the beetle had been oak logs, sticks or oak panelling which he had brought to the house from Windsor. In his original note, however, he stated that *Lyctus brunneus* had been "breeding in a dressing table in the room which is now my study." which makes the source of his specimen somewhat uncertain.

The explanation for the presence of this beetle in the open at Windsor is not at present obvious. Both *Lyctus brunneus* Steph. and *L. canaliculatus* Goeze have been recorded from the Windsor area (see Donisthorpe 1939 *Entomologist's mon. Mag.* **74**:77) and both species have been taken there by my friend Mr. A. A. Allen. He tells me, however, that he has not come across either species at Windsor for many years nor have I come across it there in repeated visits during the past 8 years. Although *Lyctus* spp. seem to prefer milled timber, they have been noted at Windsor in boughs and stumps of oak and elm and I know of an old oak tree in Richmond Park which

has been infested with *L. brunneus* for many years. The latter infestation, however, is not obvious and there could well be similar infestation of trees in Windsor Great Park near where I found the example of *P. carus* even though I did not find them.

I thank Mr. A. R. Wiseman, Deputy Ranger for permission to study beetles at Windsor and Mrs. S. Garnett of the Nature Conservancy Council for arranging this. Mr. Ted Green kindly drew my attention to the logs. J. A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

CIS PUNCTULATUS GYLLENHAL (COLEOPTERA: CISIDAE): A NORTHERN SPECIES ESTABLISHED IN SUFFOLK — Allen (1937, *Entomologist's Rec. J. Var.*, **49**: 60-61) reported taking "about half a dozen" *C. punctulatus* "in small dry Polypori (probably *P. abietinus*) on the trunk of a dead standing pine" at Swanley Wood near Farningham, North Kent, in 1933. To my knowledge, this remains the only previously published record south of Cumberland.

*C. punctulatus* was beaten in numbers from the branches of a recently fallen Corsican Pine, *Pinus nigra* var. *maritima* (Ait.) Melville on Lower Hollesley Common, East Suffolk, on the southern edge of the extensive conifer area of Rendlesham Forest, on 25th July, 1981. The "needles" of the tree, though brown, were still quite firmly attached and the large number of beetles indicated local breeding. I thank Mr. C. Johnson for confirming my identification of *C. punctulatus*. H. MENDEL, The Museum, High Street, Ipswich IP1 3QH.

SOME NOTABLE DEADWOOD ASSOCIATED COLEOPTERA FROM N. SOMERSET. — A short visit to N. Somerset in October, 1986, produced a number of interesting dead wood associated beetles. Large old willow pollards along field boundaries at Walton Moor (ST 432728) on the 17th contained the rare *Anisoxya fuscula* (Illig.) and larvae of *Stenagostus villosus* (Fourcr.). Dr. I. F. G. McLean swept the rare *Tetratoma desmaresti* Latr. in an adjacent poplar plantation. The same day in Long Wood, Cheddar (ST 4855) produced *Mycetophagus atomarius* (F.) in a collapsed beech pollard. The mature oaks of Great Breech Wood (ST 5031) on the 18th contained the rare *Rhizophagus nitidulus* (F.), as well as *Bitoma crenata* (F.), *Pediacus dermestoides* (F.), *Cerylon ferrugineum* Steph. and *Paromalus flavicornis* (Herbst). Four of these species — *S. villosus, T. desmaresti, R. nitidulus* and *B. crenata* — are additions to W. A. Wilson's *Coleoptera of Somerset* (Somersetshire Arch. Nat. Hist. Soc., 1958). K. N. A. ALEXANDER, 22 Cecily Hill, Cirencester, Glos. GL7 2EF.

# THE EARLY STAGES OF *PARORNIX CARPINELLA* (FREY) AND *P. FAGIVORA* (FREY) (LEPIDOPTERA: GRACILLARIIDAE)

By A. M. Emmet *

In an earlier paper (Emmet, 1986) I introduced *P. carpinella* as a species new to the British list and asked microlepidopterists to help to find out if there were differences from *P. fagivora* in the early stages, wing pattern and genitalia. The present paper provides some of the answers. I pointed out that both species were very local and occurred at low density where found, and this was confirmed by my experience during late September and October, 1986. It required sixteen man-hours of searching in a known locality to procure four apparently healthy larvae of *P. carpinella* and eight hours for a single *P. fagivora*. The former were from Chalkney Wood, about seven miles west of Colchester in north Essex; the latter from Ellenden Wood Nature Reserve, east Kent, with kind permission from the Kent Trust for Nature Conservation. However, in addition to the larvae I obtained over a dozen vacated or aborted feedings of *P. carpinella* and I already had over twenty pressed leaves showing the feeding of *P. fagivora* collected from Ellenden Wood when I was working on the text for MBGBI Volume 2.

The pupae were brought indoors on the 19th January, after lying under snow for a week. A male and female *P. carpinella* emerged on 10th February followed by a parasite, and a female *P. fagivora* on 11th March. I propose to describe the early stages of *P. carpinella* in full but of *P. fagivora* only so as to indicate the differences, the most important of which are highlighted by the use of itialics.

## P. carpinella

OVUM. Laid on the underside of a leaf of hornbeam (*Carpinus betula*).

LARVA. Head pale yellowish brown with *four* posterior black spots in a transverse row. Body pale greenish grey, integument glossy; gut purplish or greyish; prothoracic plate with a transverse row of four *conspicuous* black spots, larger than those on head; leg pale brown with a broad *black* band on each segment.

Feeding starts in a *relatively straight* gallery in the lower epidermis, with a central line of *greenish black* frass adhering to the cuticle. This is expanded into a blotch which *seldom absorbs the earlier gallery*. The blotch is usually *elongate* between veins, measuring *c.* 12 x 3mm, but one mine was found which was more or less square. During the tissue-feeding phase the frass at first collects

*Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF.

round the margins of the mine; the larva at this time is lightly covering the lower epidermis with silk and transports some of these grains in its mouth and incorporates them into its spinning. The silk contracts, drawing the sides together to form a *distinctly 'inflated' tube with a strong central crease and numerous smaller parallel creases.* The epidermis is mottled by the greenish black frass and this readily distinguished the mine from that of *Phyllonorycter tenerella* (Joannis) which is unspotted. All the parenchyma is consumed but the nervures remain uneaten, giving the upper epidermis a reticulate appearance. After the spinning phase is over, the now black frass is *stacked at one end of the mine.*

After leaving its mine, the larva folds the edge of a leaf, often the same leaf, downwards to form a pocket *c.* 15mm long, within which it eats through to the upper epidermis, leaving the veins and irregular patches of parenchyma uneaten; the frass is deposited at one end of the fold. Two such folds are made, the second measuring *c.* 25mm in length; one of my larvae under observation made a third pocket but vacated it for pupation after the scantiest of feeding. The first fold in every example seen has been *close to the petiole*, and the second is often in the same position. Not infrequently the mine and both folds are on a single leaf. When full-fed, the larva spins an ochreous cocoon on the upperside margin of a leaf, drawing the edge over to conceal the cocoon; the leaf chosen may be the last one on which the larva fed.

PUPA. Pale brown; dorsum of each abdominal segment with irregular transverse rows of spines, decreasing in size from the anterior to posterior margin. There are about *25 spines in each anterior row.*

## P. fagivora

OVUM. Laid on the underside of a leaf of beech (*Fagus sylvatica*).

LARVA. Head yellowish brown with *two* posterior dark spots. Body greenish white; gut dark green to purplish; prothoracic plate with a transverse row of rather *obscure* darker spots; leg almost concolorous with a *pale yellowish brown* band on each segment.

Feeding starts in a *contorted* gallery which is *usually absorbed by the subsequent blotch.* This is generally *subrectangular. little arched by spinning and almost without creases.* The frass, some of which marbles the lower cuticle, is at first *reddish*; later it is black and *collects round the margins of the mine.* After leaving the mine, the larva makes folds similar to those of *P. carpinella*, but the preferred position for the first fold is the *leaf-tip.* The cocoon is likewise similar, generally spun on the upper surface, although in the 1986 example it was on the underside.

PUPA. Differs from that of *P. carpinella* in having fewer but larger spines on the dorsal surface of the abdominal segments, numbering about *12 in each anterior row.*

The larvae are readily separable by the markings on the head and prothoracic plate, and by the legs which to the naked eye look wholly black in *P. carpinella* and colourless in *P. fagivora*. The differences noted in the feeding patterns are remarkably constant.

The adults may be determined by the labial palpus which is conspicuously black-banded in *P. carpinella* but immaculate or with the faintest possible external shading in *P. fagivora.* Both species may be separated from other *Parornix* by the ochreous tinge to the pale markings, but there seems to be no way of telling them apart on wing-pattern alone. The bred material at my disposal is still insufficient for figuring the genitalia since at least two of each sex of each species are needed for reliable comparison. Mr. Svensson has now studied the male genitalia in Sweden and informs me that he has found good distinguishing characters.

The vice-counties from which *P. carpinella* has been recorded are now 14, 15, 16, 18 and 19. East Sussex (VC14) is an addition, based on a specimen I took from a trunk of hornbeam at Abbots Wood on 11 May 1976 and have now identified from its labial palpi; I have also revisited the locality and confirmed that there is no beech in the vicinity. *Parornix* of this group captured amongst beeches in Kent localities where *P. fagivora* breeds all have immaculate palpi.

## Reference

Emmet, A. M., 1986. *Parornix carpinella* (Frey, 1863) a distinct species from *P. fagivora* (Frey, 1861) (Lep., Gracillariidae). *Entomologist's Rec. J. Var.* **98**: 144-146.

OECOPHORA BRACTELLA (LINNAEUS) (LEP.: OECOPHORIDAE) SECOND DEVON LOCALITY. — I noted (1986, *Ent. Rec.* **98**: 61) the first specimen of this species for Devon. I wrongly stated that this was the fifth vice-county record in the British Isles. I am grateful to Dr. J. R. Langmaid for advising me that it was the seventh.

In 1986 I found *O. bractella* at a second Devon locality. Be-8th March and 19th April at Hembury Woods I found several larvae amongst slight webbing under the bark of dead oak branches. These produced adults between 17th April and 22nd May. The larvae seemed to occur only on branches of hard, not rotten, wood whose bark was fairly dry and easily removed by hand.

I am grateful to the National Trust who own the woods for granting me permission to record there. R. J. HECKFORD, 67, Newnham Road, Plympton, Plymouth.

DIORYCTRIA SPECIES (LEP. PYRALIDAE) IN WINDSOR FOREST, BERKSHIRE. – For the last four years detailed records have been obtained from seven sites in one of the larger continuous tracts of Windsor Forest. In 1984 special note was made of the occurence of Pyralid species, these observations being followed up more casually in subsequent years. Over this period some specimens of *Dioryctria* were taken for specific confirmation.
This study has shown that:–

| | |
|---|---|
| *D. abietella* (D. & S.) | Occurs at all sites but never more than one or two at a time. |
| *D. mutatella* (Fuchs) | Found at one site in some numbers with several noted at a second spot. The melanic form has not been seen in the Forest. |
| *D. schuetzeella* (Fuchs) | A specimen taken 18.vii.84 but unrecognised at the time. I am indebted to Mr. Chalmers-Hunt for the subsequent identification. A special effort will be made in 1987 to determine the status of this species in the area. |

*Pinus sylvestris* together with exotic species of *Pinus, Picea, Abies, Larix,* and *Cupressus* are planted throughout the wood so there is much scope for the study of the larval biology of the three recognised and possibly other species of *Dioryctria*. P. J. BAKER, Mount Vale, The Drive, Virginia Water, Surrey GU25 4BP.

CLEORA CINCTARIA D. & S. (LEP.: GEOMETRIDAE), THE RINGED CARPET, IN DUMFRIES-SHIRE – A single male of *C. cinctaria* was caught in the Rothamsted Insect Survey light trap at Mabie, near Dumfries (O. S. grid ref. NX951 707, Site No. 454) on the night of 9/10.v.1986. So far as I am aware *cinctaria* has not previously been recorded from Dumfries-shire.

In Scotland this species is represented by the subspecies *bowesi* Richardson. There seem to be two main areas where it is known to occur: One in central Scotland (Inverness-shire, Perthshire, and Argyll) and one in S. W. Scotland (Kirkcudbrightshire and Wigtownshire) (Skinner, B. 1984. *Colour Identification Guide to the Moths of the British Isles,* p. 62 Viking). This record constitutes an expansion in the known range of the latter colony.

It is quite possible that *cinctaria* has been overlooked in other areas as worn examples can appear very similar to *Ectropis bistortata* Goeze and *E. crepuscularia* D. & S. The much straighter costa and more pointed forewing apices of *cinctaria* should aid separation, despite the condition of the specimens being identified.

Thanks are extended to Mr. P. Harrision for operating the trap. ADRIAN M. RILEY, Entomology Department, Rothamsted Expeimental Station. Harpenden, Hertfordshire, AL5 2JQ.

# REARING THE PAINTED LADY *CYNTHIA CARDUI* L. WITH PARTICULAR REFERENCE TO THE USE OF SEMISYNTHETIC DIET

By BRIAN O.C. GARDINER*

## Introduction

This common and worldwide butterfly is usually quoted as feeding upon thistles (*Carduus* species being those most often cited) with the stinging nettle (*Urtica dioica*) given as a close second choice. A search of the more common and widely used butterfly books reveals that it has been found on a very wide range of plants and is even occasionally a pest on some of them (eg *Cynira* in France (Batra et al 1981)). In view of the fact that it is a notable migrant and of cosmopolitan distribution it is perhaps not surprising that it should be able to at least survive on such a wide range of food-plants as have been recorded. These are listed in Table 1. One does wonder, however, how many of the given foodplants are quoted from earlier works, rather than original observations. It seems quite likely that over parts of its range, local populations may well have distinct feeding preferences and be unable to survive on plants utilised by other populations which may be spatially separated by thousands of miles. Nevertheless it does seem from statements made in the literature over a long period of time that thistle and nettle are what the larvae are most often to be found on, and have most frequently been reared on, and that the other quoted foodplants are much more rarely utilized.

In 1985 there was a large early immigration of the painted lady into England and while these did not reach Cambridge, thanks to the generosity of Dick Burgess who supplied me with stock I was able to carry out extensive rearing experiments and to develop a semisynthetic diet for the larvae.

## The recorded foodplants

Painted lady larvae have been recorded from a wide variety of foodplants and a record of those stated in some of the commoner books over the past two centuries is given in Table 1. By far the commonest foodplant quoted, in all 16 books consulted, is thistle, either as 'thistle(s)', as a specific member of the genus *Carduus* or *Cirsium*, or just the generic name is given. Taxonomically these two genera are confused and species have changed over from time to time. In view of the difficulty in identification, not to mention

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taxonomic shifts from one genus to another, it is perhaps not too surprising that some authors are reluctant to commit themselves to species. Next in order of precedence is nettle with 12 mentions while *Malva* and *Echium* are equal third.

The majority of the recorded foodplants belong to the Compositae with a scattering of other families of which the Urticaceae and Malvaceae appear the most favoured. I am inclined to dismiss Harris's quote of dock as being due to this plant being nearly always found alongside nettles and thistles anyway, for no other author in two centuries has confirmed it. Two of the authors cited (Rowland-Brown and Batra *et al.*) give a number of foodplants not otherwise mentioned in English literature and it is interesting to find that in both their cases they have quoted from Continental or Indian sources and it is extremely likely that the painted lady utilizes alternative foodplants in different regions of its range, for it is, after all, of world-wide distribution.

It is difficult to evaluate to what extent authors have stated a foodplant from personal knowledge or have copied from some previous author. Like many other Lepidoptera the painted lady may well be found to accept in captivity foodplants it does not eat in the wild and in view of Warren's recent finding that *C. nutans* (interestingly enough placed first by Stainton) is preferred in nature and my own failure with thistle (see below),I feel that much more observation on the laying preferences of the adult butterflies needs to be done.

## Materials and Methods

The stock obtained from Dick was reared up on stinging nettle and from the resultant adults and their progeny, some tens of thousands in all, various feeding experiments were carried out. All stages were kept in a heated insectary which has been in use for many years for the continuous rearing of *Pieris brassicae* L. and many other species of insect from time to time. The light is natural daylight which is extended when necessary to 18 hours per day by means of an 80W fluorescent strip light controlled by a timeswitch and the temperature is kept between 20–25° C by means of a 2 kW fanheater controlled by a thermostat. However, during very warm weather the daytime temperature exceeds 25° and has been known to go above 30° for a few hours during the day.

The butterflies were kept in a corner of the building, in a cage 18 inches square and 30 inches high, the two outside sides of the cage being of glass which formed part of the building while the inner sides and top were of netting. This corner of the insectary catches the sun from mid-morning to evening. The butterflies were given 10% white sugar solution either in artificial flowers as has been described for *P. brassicae* (Gardiner 1985), or else in a plastic dish

| FOODPLANT | AUTHORITIES |
|---|---|
| COMPOSITAE | |
| Thistle(s) | Harris, Samoulle, Humphreys & Westwood, South, Rowland-Brown,Holland,Scorer,Howarth,Cribb, Batra et al.,Heath et al. |
| Carduus arvensis | Rennie,Frowhawk,Stokoe,Allan,Cribb |
| C.lanceolatus | Humphreys & Westwood, Stainton,Frowhawk,Scorer |
| C.nutans | Stainton, Frowhawk,Stokoe,Allan,Batra et al. |
| C.crispus | Stokoe,Allan |
| C.acanthoides | Stainton, Frowhawk, Batra et al. |
| C.acaulis | Frowhawk |
| C.edelbergii | Batra et al. |
| C.pycnocephalus | Batra et al. |
| C.tenuiflorus | Batra et al. |
| C.vulgare | Stokoe |
| C.palustre | Stokoe |
| Carlina | Batra et al. |
| C.vulgaris | Allan |
| Onopordum | Batra et al. |
| O.acanthium | Allan, Stokoe |
| Arctium | South, Scorer, Howarth |
| A.minus | Allan |
| A.lappa | Rowland-Brown, Stokoe, Frowhawk |
| Filaga germanica | Allan, Stokoe |
| F.arvensis | Rowland-Brown |
| Gnaphalium | Rowland-Brown |
| Silybum | Rowland-Brown, Batra et al. |
| Cynara | Humphreys & Westwood, Rowland-Brown,Batra et al., Cribb |
| Centaurea | Batra et al. |
| Carthamus | Batra et al. |
| Cnicus | Batra et al. |
| URTICACEAE | |
| Nettle(s) | Harris, Rennie, Humphreys & Westwood, South,Holland, Rowland-Brown,Scorer,Frowhawk,Howarth,Stokoe,Allan, Batra et al. |
| Parietaria | Rowland-Brown |
| BORAGINACEAE | |
| Echium sp. | South, Scorer,Howarth |
| E.vulgare | Rowland-Brown,Frowhawk,Stokoe,Allan |
| Nonnea pulla | Rowland-Brown |
| MALVACEAE | |
| Malva | Rennie,Humphreys & Westwood, South,Scorer,Howarth |
| M.sylvestris | Rowland-Brown,Frowhawk,Stokoe,Allan |
| Althea | Heath et al. |
| CHENOPODIACEAE | |
| Chenopodium | Rowland-Brown,Allan |
| UMBELLIFERAE | |
| Eryngium | Rowland-Brown |
| LEGUMINOSAE | |
| Astragalus | Batra et al. |
| Runner beans | Allan,Howarth |
| POLYGONIACEAE | |
| Docks | Harris |

Table 1: published foodplants of the painted lady.

containing a blue plastic pot scourer, which gives an ideal foothold to feeding butterflies. The sugar was supplemented with real flowers from time to time, especially buddleia, mallow, *Lavetera,* burdock and *Sedum.*

The buddleia was obtained from a bush growing in my garden, the *Lavatera* was obtained from a local garden centre, but all the nettle, mallow, burdock and thistle used was obtained from a field laid down to a crop of cabbage on the one side and sugar beet on the other and were essentially 'weeds' flourishing along the edges of a crop. Praise be that some farmers are friendly enough to us entomologists!

## The adults and Oviposition

Potted stinging nettle was normally supplied for oviposition and eggs were freely laid on this plant. It was observed, however, that eggs were being laid elsewhere, particularly on the flowers of the buddleia and also on the netting sides of the cage when, by chance, a stinging nettle had been left alongside, out of touch of, but within visual and (possibly!) olfactory range. Eggs were observed to be laid freely on thistle, burdock, *Malva* and *Lavatera* but not on *Sedum* , valerian, Michaelmas daisy, nor any of the other various flowering plants occasionally put into the cage either for feeding purposes or just as foliage on which the butterflies could settle for sunning themselves during the day or roost at night. In view of the subsequent failure of the larvae on buddleia it was rather surprising that even when nettle or other suitable foodplants were also present eggs continued to be laid on this unsuitable plant.

Under the conditions they were kept, whenever the sun was shining into their cage the butterflies were very active and fed and mated readily. It was particularly noticed that they spent a considerable amount of their time 'sunning' themselves with wings open. They also went early to roost, late afternoon or early evening in summer and as soon as the light started to fade in the autumn and winter. Roosting was a distinctly gregarious activity, the corners of the cage, both upper and lower, being preferred. Once roosted they were very loth to being disturbed and would sit quite tight even when prodded. In this they are quite unlike *P. brassicae* which remains very active as long as there is any sort of light available and will even take off when disturbed in the dark.

Although detailed records were not kept, a small number of individuals were marked to see what happened to them and it was noticed that when freshly emerged butterflies were put into the cage, some 10–20% would be dead within a few days and it is a reasonable assumption that these had failed to feed and settle down to cage life.

Once they had survived the first few days then their life expectancy was about a month and a number of specimens lived for at least two months with one particular individual just exceeding three months.

## Rearing on stinging nettle

Eggs laid on nettle were allowed to hatch and since there were usually far too many larvae on the plant for it to support in comfort, either another plant was placed alongside and touching, so that the larvae transferred themselves, or else the egg-bearing leaves were cut off and placed in plastic boxes with cut nettle foliage or semi-synthetic diet. It was found that if the cut nettles were placed in a jar of water and the foliage was then covered with a plastic bag, when all was kept under refrigeration (4° C) it remained usable for 7–10 days whereas in the warmth of the insectary, or even outside, nettles did not last more than a couple of days. The older foliage was found to deteriorate much faster than the young growth.

Perhaps more interesting was that the larvae showed a definite preference for younger, fresh foliage and in autumn, when the previous years nettles had seeded and the new growth was about a foot high, then if these plants were uprooted they too would keep well under refrigeration and could also be potted up *on masse* to give ideal pabulum to the larvae.

At first attempts were made to keep the larvae at quite high densities, some 50 or so in plastic boxes 7 x 5 x 2 inches in size. This seemed to be working at first and the larvae developed well up to the third instar, but after this there was very high, sometimes 100%, mortality and it was not until the density was lowered to only about a dozen per box that the mortality became neglegible. It was also observed, however, that even when the larvae were thinned out at the third instar, the earlier crowding had had a deleterous effect, for the later mortality, even when the larvae were then being kept singly, was of the order of 50–100%. When, however, the larval densities were kept down so that no more than 10–20 were in each container from the beginning then later mortality did not exceed 5–10% and in many batches was nil.

If the larvae were left crowded on the oviposition plants, they immediately after hatching would wander off and be lost. If they could be caught at this stage it was not too difficult, but very tedious, to gather them up with a sable-hair brush and transfer them directly into individual pots of semi-synthetic diet.

It soon became obvious that some ‘limiting’ factor was at work. The potted nettle plants were all rather small and seldom exceeded a dozen leaves on each plant none of which exceeded 1½ square inches in area. On such a plant hundreds of eggs would be laid. When left

to their own devices, as mentioned above, most of the newly hatched larvae would wander off the plant and, if not gathered up, be lost. By the second instar there were left, at most, some 3 or 4 larvae per leaf on the plant.

On nettle, therefore, the early instars were reared either on growing potted plants or on cut foliage in plastic boxes. The later instars were all reared on cut foliage in pots of water and were kept in airy cages of about 1½ cu ft at a density not exceeding 40 per cage. As already stated, provided the early instars had not been kept crowded, losses did not exceed 5% and were often due to accidents rather than other causes.

A continuous brood was kept in this way on nettle in order to act as a control to the other foods being used. In general the larvae resulting from eggs laid over the same period by a given group of adults were divided between the diet or other plants being offered.

**Attempts to rear on thistles**

Some potted thistles (*Carduus arvensis*) were put into the cage on several occasions and eggs were laid on them. These duly hatched and the larvae commenced to feed and, as had happened when the nettles were overburdened with too many eggs, when the larvae had hatched, the surplus wandered off the plant. However, in no case did any of the larvae feeding on thistle survive beyond the third instar. Just in case this could have been due to the fact that they were so overcrowded in the very early stage, some further potted thistles were put into the adult cage for a few minutes only and watched until only a few eggs had been deposited. These duly hatched and the larvae started to feed on the thistle, but again none survived beyond the third instar. At the same time contemporary larvae were flourishing with minimum mortality on potted nettle as already described. Other larvae were removed on hatching and split into two batches. One half were given thistle, this time *Carduus vulgare* and the other half nettle, and were put into plastic boxes at the low density of 10–20 per box already referred to. Again those on the nettle survived and those on the thistle did not. In view of the fact that thistles are quoted in nearly all the books as being a main foodplant of the painted lady, I have no valid explanation for these findings, but some theorising which is considered further under the Discussion below. The thistles were obtained from the same field as were the nettles, the two being totally intermingled as 'weeds' in a cabbage crop, and it is therefore impossible that they were somehow contaminated with any poison, for if they had been then so too would be the nettles used, not to mention cabbage from the same source being used to feed other species.

## Rearing on Mallows

When reared on common mallow *Malva sylvestris*, either in plastic boxes or on growing or cut foliage in water, and at low densities, at least 90% of the larvae pupated and produced butterflies. This survival rate is comparable with those on nettle.

Although eggs were laid so freely on it, no larvae survived beyond the first instar on the tree mallow (*Lavateria olbia*) and indeed they were clearly very unhappy on it and would wander off even when only a few were present on a large plant and all of the larvae that nibbled the leaf of this plant died as if they had been poisoned. Indeed it was noticed that even those that, after eating, were allowed to transfer to nettle, still died within a day or two. This plant is incorrectly sold by some garden centres as common mallow.

## Rearing on Burdock

Eggs were particularly laid in between the bracts of the flowerheads of the giant burdock (*Arctium lappa*) but the larvae failed to eat at this point and would wander off onto the leaves. Eggs laid here, however, did not all go to waste, as by putting the cut-off seed head into a confined space with some semisynthetic diet, many would transfer readily onto it, the disadvantage being that the seedheads clearly carried fungus spores which in some cases so found the diet to their liking that they took over and swamped the larvae. This could happen overnight so fast did the fungus grow and before all the eggs had hatched. There was very considerable mortality in the early stages which I considered to be due to the fact that the plants were at the time of use old and running to seed with the result that most leaves were hard and sere. In the Cambridgshire fens this plant grows to an enormous size, often 7–8 foot high and 5 foot in diameter. Nevertheless, in spite of the losses, once the larvae were established on the freshest foliage that could be found and had managed to survive until the third instar, nearly all then fed up to pupation and produced butterflies. This burdock did not keep well in water (which could have been due to its being already senescent) and all larvae on it were kept in plastic boxes. No potted examples of this plant were available for testing. In spite of the high mortality on this foodplant, I believe, in view of the survival of the later instars, that the early mortality was due to its being used late in the season when the plants were hard, sere and senescent and there is no doubt in my mind but that survival on fresh young growth would be equal to that obtained on mallow or nettle.

**Failure to rear on buddleia**

Flowers of buddleia (*Buddleia davidii*) were supplied to the butterflies for feeding purposes. This is not a recorded foodplant of the species and it was therefore a surprise to find that these flowers were being smothered with eggs. Thinking this might be a mistake on their part, due to nettle or other more normal foodplant not always being present in the cage (flowers for feeding were left permanently in the cage but plants for oviposition were removed every evening in order not to have a large age-spread of eggs), an experiment was done and close observation made, so that whenever buddleia flowers were present so too were nettles available for oviposition. Nevertheless, even when they had the clear choice of a natural and known suitable foodplant, the adults continued to lay on the buddleia. On the whole they preferred to deposit their eggs on the flowers rather than on the leaves.

The eggs so laid duly hatched and, as with overcrowding on other plants, most of the larvae wandered off. Nevertheless some did commence to feed, but were clearly unhappy and all of the early larvae found on buddleia wandered off and were lost. Later batches, therefore, were confined, at low densities, in plastic boxes and supplied with fresh buddleia leaf. Most, but not all, would start to feed. They were clearly not happy and would wander about their container, unlike those on the nettle which remained within the little silk tent they like to spin. About half of those that commenced feeding became second instar and a very few made it to the third instar. None survived beyond this. It was not easy to decide what they died from. The impression is that it was slow starvation due to a reluctance to feed at their normal rate, but it could also be that they were being slowly poisoned. The buddleia leaves clearly contained something not to their liking.

The most surprising thing about this result is not so much the larvae failing to survive, as the adults being so ready to lay on what is clearly a lethal pabulum. Most, if not all, butterfly species go to great lengths to avoid depositing their eggs an any plant their offspring will not survive on and in view of the adults partiality to buddleia flowers one wonders if under natural conditions eggs are also deposited thereon.

(*to be concluded*)

# MICROLEPIDOPTERA – A REVIEW OF THE YEAR 1985

Compiled By DAVID J. L. AGASSIZ*

1985 was not a good year for entomologists in Britain, and we assume it was not very good for the insects either. The spring was long, cold and wet. The best of the weather was in September and October which was too late for most of the productive field-work. Despite this, with an ever increasing band of able microlepidopterists, some fascinating discoveries were made. I will deal first with species added to the British list.

The keen eyes of R. J. Heckford detected a specimen of *Celypha rurestrana* which specialists in the Tortricidae had anticipated as a possibility in this country. It could easily have been overlooked because of similarity to the ubiquitous *Olethreutes lacunana*, and this discovery has led to at least one further specimen being noted in the collection of E. C. Pelham-Clinton. Others may yet be found and the species may have been overlooked for many years.

Bob Heckford again, continuing his study of the local plant *Genista pilosa* found *Syncopacma suecicella* which our friends in Scandinavia have recently added to their known fauna. Because the foodplant is so restricted this moth like *Phyllonorycter staintoniella* is unlikely to be more widespread. One wonders how they ever found their way to Cornwall!

*Parornix carpinella* is another species which has apparently been resident for a very long time, but whose distinctness as a good British species has been brought to light by A. M. Emmet. In a group whose adults look so alike one can never be surprised that a further species lies hidden.

*Elachista collitella* has once again been added to the list of our fauna after a chequered history of identification and misidentification, and again much of the credit is due to Bob Heckford. There are other species which appear in published check lists without any further information about them being made known. One such is *E. orstadii* whose status has now been described by E. C. Pelham-Clinton.

A foreign journal is an unlikely place to find an addition to the British list – the more so when it is French. *Entomologica Gallica* was an interesting journal and it is a pity it was forced to discontinue after only one volume. In the last part was a revision of the plume genus *Stenoptilia* by Christian Gibeaux which included a new species *gallobritannidactyla* (to the glory of British & French lepidopterology!), of which specimens cited came from Kent. The species is described as closely related to *bipunctidactyla*. It is interes-

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ting to compare the remarks of Pierce & Metcalfe (1939) when listing ten synonyms of *bipunctidactyla*: "This species, as the numerous names suggest, offers difficulties. We think it is possible that there may be two species with the Anellus lobes different. After examination of a quantity of material from various places. . . we have decided to keep all under the one original name *bipunctidactyla* Scop." Although Gibeaux lists 15 paratypes it is not clear how many other specimens were allocated to this species, nor how many were dissected. One feels that further research is necessary. According to the data labels some were said to be from *Antirrhinum* and one bred from a larva on *Euphrasia*.

*S. pelidnodactyla* is another species in the same complex which has surreptitiously crept into the British list, albeit with an asterisk. This may be worthy of comment even though it has nothing to do with 1985. Specimens taken on Ben Lawers, v.c.88 in 1957 were tentatively assigned to this species by Dr. Bradley. M. Christian Gibeaux has examined the specimens in the BM(NH) and says they are not *pelidnodactyla*, their identity remains a mystery; at least one other species in the *bipunctidactyla* group is amongst British material – more news another year!

Long lost or exceedingly rare species continue to be taken. Two of those in 1985 deserve special mention. The rediscovery in its original Scottish locality of *Eana argentana* by K. P. Bland and R. P. Knill-Jones is heartening after so many years' absence. *Caloptilia hemidactylella* is another species almost unknown to living collectors which Martin Corley has shown to be holding on to its British status.

As always I am very grateful to all who have submitted records, who are identified in the Systematic list by their initials: B. R. Baker, H. E. Beaumont, K. P. Bland, K. G. M. Bond, P. W. Brown, J. M. Chalmers-Hunt, J. R. Langmaid, H. N. Michaelis, S. M. Palmer, M. Parsons, E. C. Pelham-Clinton, A. N. B. Simpson, F. H. N. Smith, D. H. Sterling, M. J. Sterling, P. H. Sterling and E. H. Wild.

A duplicated list containing all records submitted is available from the compiler.

## Systematic List

ERIOCRANIIDAE

*Eriocrania sparrmannella* (Bosc) – Abbots Wood (14) 1. 19.viii.85 – AME; Dolgarrog (49) 28.iv.80 – HNM.

NEPTICULIDAE

*Ectoedemia argyropeza* (Zell.) – Freshwater (10) 28.x.84, Pollok Park, Glasgow (76) 11.x.84 – RPK-J.

*E. turbidella* (Zell.) – Oxford (23) tenanted mines x.85 – PHS

*E. intimella* (Zell.) – Dinton (8) – SMP; Borrowdale (70) 1. 18.x.85, most northerly record – AME

*E. atricollis* (Staint.) – Clough Wood, Hilton (57) – MJS
*E. arcuatella* (H.-S.) – Borrowdale (70) 1. 20.x.85 – AME
*E. minimella* (Zett.) – Cart & Kittoch SSSI, Glasgow (77) 1. on *Corylus* 20.x.85 – RPK-J
*E. subbimaculella* (Haw.) – Garscadden Wood, Glasgow (99) 1. 16.x.85 – RPK-J
*E. heringi* (Toll) – Borrowdale (70) 1. 18.x.85 – AME; Garscadden Wood, Glasgow (99) 1. 18.xi.84 – RPK-J
*Formoria septembrella* (Staint.) – Odell Great Wood (30), mines on *Hypericum hirsutum* x.85 – MFVC
*Fedalmia headleyella* (Staint.) – Tennyson Down (10) 1. 28.x.84 – RPK-J; Christchurch (11) 7.vii.85 – EHW, *Ent. Rec.* **97**: 164
*Trifurcula griseella* Wolff – Branscombe (1) e. pupa amongst *Helianthemum* 12.v.85 – RJH
*T. immundella* (Zell.) – Bassenthwaite (70) 1. 20.x.85 – AME
*T. beirnei* Puplesis – Southampton (11) 20.viii.35 – (W. Fassnidge) – AME, *Ent. Rec.* **98**: 134
*T. eurema* (Tutt) – Cligga Head (1) 28.vii.84 & mines 14.ix.84 – FHNS
*Stigmella dulcella* (Hein.) – Bassenthwaite (70) 1. 20.x.85 – AME
*S. splendidissimella* (H.-S.) – Bicknacre (18) 1. 7.xi.85, Bassenthwaite (70) 1. 20.x.85 – AME
*S. dryadella* Hofm. – Ben Lui (98) 17.vi.84, Ben Lawers (88) 9.vi.84 – RPK-J
*S. ulmariae* (Wocke) – Tennyson Down (10) 28.x.84, Old Kilpatrick (99) 21.x.84 – RPK-J; Stockgrove Country Park (30) 1. 9.x.85 – D. Manning per AME
*S. poterii* (Staint.) – Tennyson Down (10) 28.x.84 – RPK-J
*S. obliquella* (Hein.) – Bassenthwaite (70) 1. 19.x. 85 – AME
*S. myrtillella* (Staint.) – Whinlater Pass (70) 1. 20.x.85 – AME
*S. trimaculella* (Haw.) – Derwent Water 1. 19.x.85, Workington (70) 1.19.x.85 – AME
*S. paradoxa* (Frey) – Pegsdon (30) 1.x.85 – D. Manning per AME
*S. atricapitella* (Haw.) – Borrowdale (70) 1. 17.x.85 – AME
*S. suberivora* (Staint.) – Reading (22) 1. 3.iii.85 – N. M. Hall per AME
*S. svenssoni* (Johan.) – Co. Durham (66), S. Northumberland (67) – E. Dunn per AME; Mugdock Wood SSSI (86) – RPK-J; Botley Wood (11) 1. 28.viii.85 – JRL, *Ent. Gaz.* **37**: 116
*S. samiatella* (Zell.) – Barham (15) 9.ix.85 – AME
*S. centifoliella* (Zell.) – Thorpeness (25) 1. 2.ix.85 – AME
*S. malella* (Staint.) – Williton (5) 1. viii.85 – DJLA
*S. catharticella* (Staint.) – Cressbrook Dale (57) – MJS
*S. pyri* Glitz – Horsea Island (11) mines 27.x.85 – JRL, *Ent. Gaz.* **37**: 116

*S. aceris* (Frey) – Winchester (11) mines on *Acer platanoides* x.85 – DHS

*S. prunetorum* (Staint.) – Cressbrook Dale (57) – MJS

*S. betulicola* (Staint.) – Shotgrove Country Park (24 & 30) 1. 9.ix.85 – AME

*S. luteella* (Staint.) – Pollok Park, Glasgow (76) 19.x.84, Ruchill, Glasgow (77) 2.xi.84 – RPK-J

*S. glutinosae* (Staint.) – Borrowdale (70) 1. 19.x.85 – AME

INCURVARIIDAE

*Incurvaria pectinea* Haw. – Bouldnor (10) 14.vii.85 – RPK-J; Llanrwst (50) 26.iv.85 – HNM

*Lampronia praelatella* (D. & S.) – Chase Wood (8) – SMP

*L. luzella* (Hb.) – Bouldnor (10) 14.vii.85 – RPK-J

*L. fuscatella* (Tengst.) – Newtown Common (12) gall iv.85, bred – DHS & PHS

*Nematopogon magna* (Zell.) – Wedworth (63) 2.vi.04, L. S. Brady coll. det HEB, *Ent. Gaz.* **36**: 298

*N. metaxella* (Hb.) – Ddol Uchaf (51) 1.vii.84 – HNM; Milton of Drimmir Wood, near Blairgowrie (89) 22.vi.84, 23.vi.85 – J. M. Nelson & KPB, *Ent. Rec.* **98**: 241

*Nemophora minimella* (D. & S.) – Glaslyn (48) 1.viii.84 – M. J. Morgan & HNM; Yspyty Ifan (49) 16.vii.85 – HNM

HELIOZELIDAE

*Heliozela hammoniella* (Sorh.) – Shotgrove Country Park (30) empty mines 9.x.85 – AME

PSYCHIDAE

*Bankesia douglasii* (Staint.) – Thorn Moors (63) 31.iii.85 – HEB, *Ent. Rec.* **97**: 133

TINEIDAE

*Morophaga choragella* (D. & S.) – Faringdon (22) 9.iv.84 – MFVC

*Dryadaula pactolia* Meyr. – Howth Head (H20) vi.84 – KGMB

*N. ruricolella* (Staint.) – Denaby Ings (63) 28.vi.84 – HEB

*Nemaxera betulinella* (Payk.) – Dinton (8) – SMP; Arthog (48) 13.vi.85 – HNM

*Triaxomasia caprimulgella* (Staint.) – Charlton (16). – A. A. Allen *Ent. Rec.* **98**: 257

*Triaxomera fulvimitrella* (Sod.) – Perranporth (1) 5.vi.85 – FHNS

*Monopis weaverella* (Scott) – Thorpeness (25) 3.ix.85 – AME; East Cork (H5) v.85, **new to Ireland** – KGMB

*M. imella* (Hb.) – Pollok Park, Glasgow (76) 5.vii.85 – RPK-J

*Tineola bisselliella* (Hum.) – Nottingham (56) – MJS, *Ent. Rec.* **98**: 212

*Tinea dubiella* Staint. – Faringdon (22) 12.viii.85 – MFVC

LYONETIIDAE

*Bucculatrix nigricomella* Zell. – Rotten Calder, Glasgow (77) 18.v.85 – RPK-J

*B. maritima* Staint. – Old Kilpatrick (99) vacated mines 23.vi.85 – RPK-J

*B. albedinella* Zell. – Dinton (8) – SMP

*B. ulmella* Zell. – Bull Wood, Glasgow (76) vacated mines 27.x.85 – RPK-J; Whinlater Pass, Borrowdale (70) 1. 18-20.x.85 – AME

*B. demaryella* (Dup.) – Tinstall Forest (25) 1. 4.ix.85 – AME

GRACILLARIIDAE

*Caloptilia cuculipennella* (Hb.) – Perranporth (1) 5.vi.85 – FHNS; Arniston Engine (83) 2.iv.85 & 14.xii.85 – KPB, *Ent. Rec.* **98**: 241

*C. populetorum* (Zell.) –Gorebridge (83) 13.vii.83 – PWB; 5 miles north east of Barmouth (48) bred from 1. 25.vii.85 – MR Shaw

*C. rufipennella* (Hb.) – St. Margaret's Bay (15) 1. 10.ix.85 – AME & JRL, *Ent. Rec.* **98**: 122; Llanrwst (50) cones 18.ix.85 – HNM

*C. azaleela* (Brants) – St. Austell (2) 19.ix.85 – FHNS; Dunbartonshire (99) '85 **(New to Scotland)** –RPK-J

*C. robustella* Jackh – Flitwich NR (3) 1. 28.ix.85 – AME; Wychwood Forest (23) 12.ix.85 – MFVC

*C. hemidactylella* (D. & S.) – Wychwood Forest (23) 17.x.85 – MFVC

*Calybites auroguttella* (Steph.) – 1. on *Hypericum hirsutum* at Odell Great Wood (30) x.85. 1. on *H. tetrapterum* at Cothill (22) ix.85 – MFVC

*Parornix carpinella* (Frey) – **Newly recognised as a British species** – AME, *Ent. Rec.* **98**: 144ff.

*P. finitimella* (Zell.) – Bassenthwaite (70) 1. 20.x.85 – AME

*Leucospilapteryx omisella* (Stt.) – Cherhill (7) mines 1.viii.85 – KPB

*Phyllonorycter harrisella* (Linn.) – Stockgrove Country Park (24) 1. 9.x.85 – AME

*P. roboris* (Zell.) – Boxted (19) 28.vii.85 – AME

*P. oxyacanthae* (Frey) – Pollok Park, Glasgow (76) 1. on *Cotoneaster frigidus* – RPK-J

*P. cerasicolella* (H.-S.) – Bassenthwaite (70) 1. 20.x.85, most northerly record – AME

*P. lantanella* (Schrank) – Pegsdon (30)1.x.85 – D. Manning per AME

*P. distentella* (Zell.) – A univoltine species – AME, *Ent. Rec.* **98**: 168

*P. nigrescentella* (Logan) – Hembury Woods, near Buckfastleigh

(3) 1. on *Lathyrus montanus*, bred 22.ix.85 – RJH

*P. lautella* (Zell.) – Thorpeness, Southwold (25) 1. 3-6.ix.85 – AME

*P. stettinensis* (Nic.) – Williton (5) mines viii.85 – DJLA

*P. kleemannella* (Fabr.) – Trewarthenick, near Tregony (2) 30.v.85 from 1.x.84 – FHNS

*P. acerifoliella* (Zell.) – Saxmundham (25) 1. 6.ix.85 – AME

*P. platanoidella* (Joan.) – Pegsdon, Luton (30) 1.x.85 – D. Manning per AME

*P. comparella* (Dup.) – on *Populus nigra* (17) 2.x.85 – R. Fairclough, *Ent. Rec.* **98**: 81

*P. sagitella* (Bjerk.) – Moehdre locality (50) destroyed by roadworks – HNM

CHOREUTIDAE

*Prochoreutis myllerana* (Fabr.) – Stanford Fen (15) common 13.ix.85 – AME; Bentley Wood (8) – SMP; Saltfleetby NNR (54) vi.84 – HEB

GLYPHIPTERIGIDAE

*Glyphipterix haworthana* (Steph.) – Cors Bodgynedd, Trefriw (49) 10.v.85 – HNM

YPONOMEUTIDAE

*Argyresthia laevigatella* H.-S. – Williton (5) vacated mines viii.85 – DJLA

*A. glaucinella* Zell. – Worcs. (37) – ANBS; Wombwell Wood (63) 6.vii.85 – HEB

*Ocnerostoma friesei* Svenss. – Beeley Moor (57) – MJS

*Ypsolopha scabrella* (Linn.) – Gresford (50) viii.84 – B. Formstone & HNM

*Rhigognostis incarnatella* (Steud.) – Dinnet Moor NNR (92) '85 – M. R. Young; Bray Head (H20) i.iv.39 B. P. Beirne coll. per K.G.M.B.

*Acrolepiopsis betulella* (Curt.) – Roslin Glen LNR (83) vi.85 – KPB, *Ent. Rec.* **98**: 241 ff

EPERMENIIDAE

*Phaulernis dentella* (Zell.) – Grays Chalk Quarry (18) 29.vi.85, Ashdon (19) 3.vi.85 – AME; Torbryan (3) 14.vi.85 – JRL, RJH & ECP-C

COLEOPHORIDAE

*Coleophora milvipennis* Zell. – Stockgrove Country Park (30) 1. 9.x.85 – AME

*C. viminetella* Zell. – Glasgow Zoo (77) 7.vii.83 – RPK-J

*C. orbitella* Zell. – Llyn Bodgynedd, Trefriw (49) '85 – HNM
*C. binderella* (Koll.) – Flitwick NR (30) 1. 28.ix.85 – AME
*C. trifolii* (Curt.) – Barnstone (56) – MJS
*C. lixella* Zell. – Berry Head, Brixham (3) cases 9.x.96 – RJH
*C. striatipennella* Tengst. – Kishorn (105) 15-20.vii.84 – PWB; Pollok Park, Glasgow (76) 14.vi.84 & 4.vii.85, Rotten Calder, Glasgow (77) 13.vii.84 – RPK-J
*C. gardesanella* Toll – Leckford (12) 7.vii.85 – JRL, *Ent. Gaz.* **37**: 116
*C. peribenanderi* (Toll) – Freshwater (10) 7.viii.81 – RPK-J
*C. argentula* (Steph.) – Trawsfynedd (48) cases 31.xi.85, Notts. (56) x.85 – HNM; Markfield (55), Long Eaton (57) – MJS
*C. sternipennella* (Zett.) – Williton (5) viii.85 – DJLA
*C. murinipennella* (Dup.) – Rotten Calder, Glasgow (77) 18.v.85 – RPK-J
*C. sylvaticella* Wood – Swithland Wood (55) – MJS
*C. taeniipennella* H.-S. – Epping Forest (18) cases on *Juncus bulbosus* 5.x.85 – AME, *Ent. Rec.* **98**: 81
*C. cratipennella* (Clem.) – Braunton Burrows (4) 23.vii.85 – RJH; Southsea (11) 1.vii.85 – JRL; Pollok Park, Glasgow (76) 8.vii.83 – RPK-J
*C. maritimella* Newm. – Braunton Burrows (4) 23.vii.85 – RJH; Saltfleetby NNR (54) vii.85 from cases on *Juncus maritima* v. 85 – HEB

ELACHISTIDAE

*Elachista regificella* Sirc. – Dinton (8) – SMP; Swithland (55) – MJS
*E. atricomella* Staint. – Williton (5) viii.85 – DJLA
*E. alpinella* Staint. – Stanford Fen (15) 13.ix.85 – AME; Clynnog Fawr (49) 25.viii.85 – HNM
*E. luticomella* Zell. – Leckford (12) from 1. 21.iv.85 – MJS
*E. apicipunctella* Staint. – Cressbrook Dale (57) 8.vi.85 – MJS
*E. orstadii* Palm – Eyemouth (81) 5.vi.55 & 10.vi.67, Blair Atholl (88) 16.vii.78 – ECP-C, with description *Ent. Gaz.* **37**: 83f
*E. triatomea* (Haw.) – Llandudno (49) 4.vii.85 – HNM
*E. collitella* Staint. – **Reinstated as a British Species** – RJH, *Ent. Gaz.* **37**: 79ff
*E. triseriatella* Staint. – Berry Head Brixham (3) 9.vi.84 – RJH; Pydew & Llandudno (49) vii.85 – HNM
*E. littoricola* Le March. – S. Hants (11) 4.vi.85 – EHW, JRL & ECP-C, *Ent. Rec.* **97**: 153
*E. megerlella* (Hb.) – Leckford (12) bred from 1. 18.iv.85 – DHS
*E. unifasciella* (Haw.) – Leckford (12) bred from 1. iv.85 – DHS, *Ent. Rec.* **98**: 169
*E. revinctella* Zell. – Cressbrook Dale (57) 8.vi.85 – MJS

*Biselachista trapeziella* (Stt.) – Kishorn (105) 29.vi.85, most northerly record – PWB; Waulkmill Glen, Glasgow (76) mines 5.vi.85, Rotten Calder, Glasgow (77) bred 11.v.85, Cart & Kittoch SSSI, Glasgow (77) bred 24.iii.85 – RPK-J; Oban (98) iv.73 – JMC-H, *Ent. Rec.* **98**: 192

*Cosmiotes consortella* (Staint.) – Braunton Burrows (4) 23.vii.85 – RJH; Ailsa Craig (75) viii.-ix.85 – RPK-J

OECOPHORIDAE

*Schiffermuelleria subaquilea* (Stt.) – near Dolgelly (48), Llandudno (49), Moelfre Isaf (50) vi.85 – HNM

*Oecophora bractella* (Linn.) – Spitchwick (3) bred 2.v.85 from 1. in dead *Betula* stump – RJH, *Ent. Rec.* **98**: 61

*Parocystola acroxantha* (Meyr.) – Rosewarne (1) 2.vi.85 – A. M. Riley, *Ent. Rec.*, **97**: 229

*Depressaria ultimella* Staint. – Dinton (8) – SMP

*D. pulcherrimella* Staint. – Williton (5) viii.85 – DJLA; Saffron Walden (19) 8.ix.81 – AME

*D. chaerophylli* Zell. – Williton (5) viii.85 – DJLA

*Agonopterix alstroemeriana* (Cl.) – Lochfauld Farm, Glasgow (77) 22.v.84 – RPK-J

*A. propinquella* (Treits.) – Ballantrae (75) bred from 1.viii.85 – RPK-J

*A. kuznetzovi* Lvovsky – Coverack (1) 1. 9.vi.85 – JRL

*A. bipunctosa* (Curt.) – near Betws Gerfil (48) 1. vi.84 – HNM

ETHMIIDAE

*Ethmia terminella* Flet. – Rye Harbour (14) – A. A. Allen, *Ent. Rec.* **98**: 169

*E. bipunctella* (Fabr.) – Dinton (8) – SMP, *Ent. Rec.* **97**: 128; Ninfield (14) 26.v. & 30.viii.85 – MP, *Ent. Rec.* **97**: 164

GELECHIIDAE

*Metzneria lappella* (Linn.) – East Budleigh Common (3) ex 1. 20-27.v.85 – RJH

*M. aestivella* (Zell.) – Newborough (52) pupae 24.v.85 – HNM

*M. neuropterella* (Zell.) – Lewes (14) 18.viii.85 – AME

*Isophrictis striatella* (D. &S.) – Bangor (49) 26.vii.83 – M. J. Morgan per HNM

*Monochroa lucidella* (Steph.) – Braunton Burrows (4) 24.vii.85 – RJH

*Psamathocrita argentella* P. & M. – Newtown (10) 12.vii.85 – RPK-J

*Coleotechnites piceaella* Kearf. – Winchester (11) 10.vii.83, 9.vii.84 – DHS, *Ent. Rec.* **97**: 139

*Pseudotelphusa scalella* (Scop.) – Sutton Park, Warwicks (38) – ANBS

*Teleiodes paripunctella* (Thunb.) – Arthog (48) vi.85 – B. Formstone per HNM

*Bryotropha senectella* (Zell.) – Williton (5) viii.85 – DJLA

*B. boreella* (Dougl.) – Cathkin Braes, Glasgow (77) 16.vii.84 – RPK-J

*B. politella* (Staint.) – Leckford (12) 7.vii.85 – PHS

*Chionodes distinctella* (Zell.) – Ynyslas, Borth (46) – ANBS

*Platyedra subcinerea* (Haw.) – Pods Wood, Tiptree (19) – J. Young per AME

*Scrobipalpa clintoni* Pov. – Kennedy's Pass (75) 12.iv.85, Erskine (76) 23.iii.85, Ardmore (99) 9.iii.85, Old Kilpatrick (99) 23.iii.85, Southend Kintryre (101) 2.v.85 – RPK-J; Muck (104) 29.v.85 – R. Dobson per RPK-J

*S. atriplicella* (F.v.R.) – Barholm Saltings (73) 29.vii.83 – RPK-J

*S. acuminatella* (Sirc.) – Williton (5) viii.85 – DJLA

*Caryocolum viscariella* (Staint.) – Ailsa Craig (75) 12.iv.85 – RPK-J

*C. fraternella* (Dougl.) – Long Eaton (57) – MJS

*C. tricolorella* (Haw.) – Williton (5) viii.85 – DJLA

*Aproaerema anthyllidella* (Hb.) – Glasgow Botanic Gardens (77) 12.viii.82 – RPK-J

*Syncopacma suecicella* (Wolff) – Lizard (1) bred from *Genista pilosa*, **new to Britain**. – RJH, *Ent. Gaz.* **37**: 87ff

*Acompsia cinerella* (Clerck) – Braunton Burrows (4) 23.vii.85 – RJH

*Anarsia spartiella* (Schrank) – Old Kilpatrick (99) 23.vii.84 – RPK-J

*A. lineatella* Zell. – Croydon (17) reared from imported peach – K. G. W. Evans, *Ent. Rec.* **98**: 82; Faringdon (22) bred from l. in Spanish apricot – MFVC

## BLASTOBASIDAE

*Blastobasis lignea* Wals. – St. Austell (2) 20.viii.85 – FHNS; S. E. London (17) 7.xi.84 – A. A. Allen, *Ent. Rec.* **98**: 37

## MOMPHIDAE

*Mompha terminella* (H. & W.) – Moor Copse NR (22) l. in *Circaea lutatiana*, ix.85 – BRB; Swithland (55) – MJS

*M. miscella* (D. & S.) – Fealar Gorge (89) l. on *Helianthemum chamaecista* 18.v.85 – KPB, *Ent. Rec.* **98**: 242

*M. conturbatella* (Hb.) – Ddol Uchaf (51) 1.vii.84 – HNM

*M. lacteella* (Steph.) – Dewerstone (3) bred 18.v.85 from l. on *Epilobium montanum* – RJH, *Ent. Rec.* **98**: 121

*M. epilobiella* (D. & S.) – Old Kilpatrick (99), Kenmshead, Glasgow (76) bred, **new to Scotland** – RPK-J

*Cosmopterix zieglerella* (Hb.) – Thorpeness & Butley (25) 1. 2.ix.85 – JRL

*C. orichalcea* Staint. – Isle of Rhum (104) 26.vi.67 – ECP-C, *Ent. Rec.*, **98**: 143

COCHYLIDAE

*Trachysmia inopiana* (Haw.) – Lochfauld Farm, Glasgow (77) 3.vii.85 – RPK-J

*Phalonidia permixtana* (D. & S.) – Connel (98) 6.vii.85 – PWB

*P. alismana* (Rag.) – Dowanhill, Glasgow (77), Dawsholm, Glasgow and Old Kilpatrick (99) **New to Scotland** – RPK-J

*P. luridana* (Gregs.) – Lewes (14) 18.viii.85 – AME

*Aethes tesserana* (D. & S.) – Cotley Hill (8) – SMP

*A. hartmanniana* (Clerck) – Wylye Doen (8) – SMP

*A. williana* (Brahm) – Cotley Hill (8) – SMP

*A. beatricella* (Hb.) – Saltfleetby NNR (54) bred vi.85 – HEB

*Cochylis hybridella* (Hb.) – Tennyson Down (10) 20.vii.85 – RPK-J

*C. flaviciliana* (Westw.) – Houghton Regis (30) 26.vii.85 – A. M. Riley *Ent. Rec.* **98**: 230

TORTRICIDAE

*Cacoecimorpha pronubana* (Hb.) – Feeding on *Tamarix, Conyza canadensis & Vitis vinifera* – MP, *Ent. Rec.* **98**: 196

*Aphelia unitana* (Hb.) – Bodysgallen (49) 29.vi.84 – HNM

(*Adoxophyes privatana* (Walk.) – gp. – RJH, *Ent. Gaz.* **37**: 196)

*Eana argentana* (Clerck) – Rediscovered at Glen Tilt (89) – RPK-J & KPB, *Ent. Gaz.* **37**: 9-11

*E. penziana colquhounana* (Barr.) – Llandudno (49) vii.85 – HNM

*Acleris logiana* (Clerck) – Petersmuir Wood (82) 17.iii.85 – KPB, *Ent. Rec.* **98**: 242

*A. abietana* (Hb.) – Brodick, Arran (100) '85 – D. Warner per RPK-J

*Clepsis rurestrana* (Dup.) – Ilfracombe (4) 26.vii.85, **new to Britain** – RJH, publication awaited.

*Olethreutes arcuella* (Clerck) – Arthog (48) 30.v.84 – B. Formstone per HNM

*Apotomis capreana* (Hb.) – Williton (5) viii.85 – DJLA

*Endothenia oblongana* (Haw.) – Wrexham (50) vi.85 ex 1. on *Dipsacus* – B. Formstone per HNM

*E. ustulana* (Haw.) – Bentley Wood & Stockton Wood (8) – SMP

*E. trifoliana* (H.-S.) – Lochfauld Farm, Glasgow (77) 12.vii.84 – RPK-J

*Epinotia fraternana* (Haw.) – Bentley Wood (8) – SMP

*E. nanana* (Treits.) – Groveley (8) – SMP

*E. cruciana* (Linn.) – Dinton (8) – SMP

*E. mercuriana* (Fröl.) – Ruabon Mountain (50) 27.viii.85 – B. Formstone & HNM

*E. abbreviana* (Fabr.) – Dinton (8) – SMP

*Crocidosema plebejana* (Zell.) – Keswick (70) 7.ix.59, most northerly record – RPK-J; Cape Clear Island (H30) 30.ix.85, 3.x.85 – M. G. W. Terry, *Ent. Rec.* **98**: 175

*Griselda stagnana* (D. & S.) – Kintyre (101) 2.vi.85 – RPK-J

*Gypsonoma oppressana* (Treits.) – Gresford (50) vii.85 – M. Newstead per HNM

*Epiblema turbidana* (Treits.) – Gresford (50) 27.v.85 – Newstead & Formstone per HNM

*Pelochrista caecimaculana* (Hb.) – Orley Common (3) 3.ix.85 – RJH

*Eucosma fulvana* (Steph.) – Kirkdale (73) 7.vii.84 – RPK-J

*E. obumbratana* (L. & Z.) – Glasgow Zoo (77) 28.viii.84, Kirkdale (73) 7.viii.84 – RPK-J

*Clavigesta purdeyi* (Durr.) – Various localities (48, 49 & 50) '66-'85 – HNM

*Rhyacionia pinivorana* (L. & Z.) – Dollar (87) 2.vii.85 – A. MacLaurie per RPK-J

*Eucosmomorpha albersana* (Hb.) – Stainton Wood (63) 29.v.85 – HEB

*Pammene inquilina* Fletch. – Worcs. (37) bred – ANBS

*P. albuginana* (Guen.) – Emer Bog (11) 22.vi.85 – JRL

*P. aurantiana* (Staud.) – Friston (14) 25.vii.85 – MP

*P. herrichiana* (Hein.) – Owlsmoor (22) 21.vi.85 – BRB

*P. germmana* (Hb.) – New Copse, near Tilshead (8) – SMP

*Cydia pallifrontana* (L. & Z.) – Wytham Woods (22) vii.85 – PHS

*C. tenebrosana* (Dup.) – Matlock Moor (57) bred from berries of *Sorbus aucuparia* collected 4.viii.84 – MJS

*C. funebrana* (Treits.) – Williton (5) viii.85 – DJLA

*C. molesta* (Busck) – Plympton (3) bred from imported peach 3.ix.85 – RJH

*C. orobana* (Treits.) – Walberswick (25) 1.ix.85 – AME

*C. nigricana* (Fabr.) – Sparsholt (12) 1. 28.vii.85 – DHS

*Dicrorampha simpliciana* (Haw.) – Dinton (8) – SMP

PYRALIDAE

*Euchromius ocellea* (Haw.) – Morestead (11) 12.x.85 – PHS; Southsea (11) 6.x.85 – JRL; Huddersfield (63) per HEB, *Ent. Rec.* **98**: 212

*Scoparia ancipitella* (de la H.) – Wychwood Forest (23) 31.vii.85 – MFVC

*Parapoynx stratiotata* (Linn.) – Black Lochs SSSI (98) pupa 6.vii. **new to Scotland**, KPB, *Ent. Rec.* **98**: 242

*Evergestis pallidata* (Hufn.) – Brodick, Arran (100) '85 – D. Warner per RPK-J

*Pyrausta nigrata* (Scop.) – Llandudno (49) 4.vii.85 – HNM; Minera (50) 23.v.84 – Formstone & Newstead per HNM

*Sitochroa palealis* (D. & S.) – Dinton (8) – SMP; Winchester (11) several – DHS

*Ostrina nubilalis* (Hb.) – East Budleigh (3) ex 1. 1.vi.85 – RJH

*Dolicharthria punctalis* (D. & S.) – Solva (45) 9.vii.85 – MP

*Antigastra catalaunalis* (Dup.) Walberton (13) 2.x.85 – J. T. Radford *Ent. Gaz.* **98**: 223 251-3

*Leucinodes vagans* (Tutt) – Type specimen in Bristol Museum from Tuddenham (34) – N. W. Lear, *Ent. Gaz.*, **37**: 197

*Sceliodes laisalis* (Walk.) –Leicester (55) 29.vii.79 – D. F. Owen, *Ent. Rec.* **98**: 203

*Melissoblaptes zelleri* (Joan.) – Bradwell-on-Sea (18) 27.vii.83, 21,viii.84, viii.85, – AJ & S. F. J. Dewick per AME

*Cryptoblabes gnidiella* (Mill.) – Beeston (56) 1. in Sainsbury's pomegranates – MJS

*Eurhodope marmorea* (Haw.) – Newborough (52) bred vii.85 – HNM

*Oncocera semirubella* (Scop.) – Bradwell-on-Sea (18) 13.viii.81 – S. F. J. Dewick per AME

*Pyla fusca* (Haw.) – Williton (5) viii.85 – DJLA

*Dioryctria abietella* (D. & S.) – Unhill Wood (22) 1. in green cones of *Picea*. viii.85 – BRB

*Euzophera pinguis* (Haw.) – Vivod, near Llandudno (5) 13.viii.84 – S. Coxey per HNM

*E. bigella* (Zell.) – Eastbourne (14) 1. in Italian peach viii.85 – MP, *Ent. Gaz.* 37:40; Huddersfiled (63) bred 16.viii.85 from peach – HEB, *Ent. Rec.* **98**: 212

*Homoeosoma sinuella* (Fabr.) – Gresford (50) – Formstone & Newstead per HNM

*Phycitodes saxcicola* (Vaughn) – Houghton Regis (30) 17.viii.85 – A. M. Riley, *Ent. Rec.* **98**: 230.

PTEROPHORIDAE

*Capperia britanniodactyla* (Gregs.) – Port Kale (74) 5.vii.85 – I. D. Walker, *Ent. Rec.*, **98**: 123

*Cnaemediphorus rhododactyla* (D. & S.) – Stow Maries NR, Maldon Wick NR, Althorne (18) '85. – A. J. & S. F. J. Dewick per AME

*Platyptilia calodactyla* (D. & S.) – Minera (50) 17.viii.84 – Formstone & Newstead per HNM

*Stenoptilia gallobritannidactyla* Gibeaux – **A new name for the British list** – C. Gibeaux, *Ent. Gall.* **1**: 248

**Corrections to the Review for 1984 (*Ent. Rec.* 97**: 203-215)

p.205 *L. fuscatella* (Tengst.) – should read:
Upper Common, Bucklebury (22) iv.84 – AME & BRB

p.209 *C. deviella* Zell. – The specimen from Southsea is not of this species but *C. asteris* Mühlig – JRL, *Ent. Gaz.* **37**: 116

p. 14 *Ancylosis oblitella* (Zell.) – Wytham Woods (23) should read Wytham Wood (22)

# Notes and Observations

SOME COMMENTS ON THE RUBY TIGER MOTH (PHRAGMATOBIA FULIGINOSA L.) – Further to the paper by B. K. West on this moth (*Ent. Rec.* **98**: 129-134), I recorded in this journal many years ago (*Ent. Rec.* **65**: 129) some experiences with a moth of Cornish origin. I obtained some eggs from a wild caught female during a brief home leave, and took the resultant larvae back to Kampala. There I reared four successive generations until the strain died out, probably due to excessive inbreeding. Each generation segregated into a larger portion which continued its development without delay, and a smaller one that went into diapause. This latter group failed to survive, despite attempts to breed them on. Everything pointed to this species being continuously brooded under suitable conditions. D. G. SEVASTOPULO PO Box 95617, Mombasa, Kenya.

FURTHER CAMBRIDGESHIRE RECORDS OF HECATERA DYSODEA D. & S. – Further to a recent paper on the subject of the extinction of *Hecatera dysodea* D. & S., the small ranunculus moth (*Ent. Rec.*, 1986: **98**: 70-78, 114-118, 154-158), a little more information has come to notice. Mr. S. W. Pooles kindly contacted me on the subject and was able to confirm that the late John Peed of Whittlesea in Cambridgeshire assured in the late 1920's that he was still recording the species larval stage annually in his garden. on Cos lettuce. Mr. Peed's collection, now in the Peterborough Museum, contains 18 specimens dated 1896.

In the E. Craske collection within the same museum are another eight specimens taken in July 1920 from Cambridge. These records demonstrate the insects continued establishment in Cambridgeshire in more than one locality after the First World War and nationally are the only known sightings during the 1920's.

I am most grateful to Mr. Pooles for his information and to Mark Parsons for researching the specimens housed at Peterborough Museum. COLIN PRATT, 5 - View Road, Peacehaven, East Sussex.

ATOLMIS RUBRICOLLIS L. (LEP.: ARCTIIDAE) IN ARGYLLSHIRE – whilst collecting with R. McCormick on the private estate of Druimnell House, Port Appin, we recorded *rubricollis* on the nights of 22 and 24.vi.1986. Skinner, in *Moths of the British Isles*, does not

include Scotland in the known range of this moth. Although there is a possibility that these captures were of immigrants, P. Wormall (*in litt*) noted a specimen in the Oban area on 30.v.1971, and the Scottish Insect Record Index (see *Ent. Rec.* **99**:37) gives a further 12 recorded localities. C. C. PENNY, 109 Waveney Drive, Chelmsford, Essex.

PTEROPHORUS GALACTODACTYLA D. & S. (LEP.: PTEROPHORIDAE) IN LINCOLNSHIRE — during June 1986, whilst collecting at Saltfeelby, Lincolnshire, in the company of C. Hart and R. McCormick, a number of larvae of *galactodactyla* were found feeding on burdock (*Arctium lappa*). Beirne, in *British Pyralid and Plume Moths* states ". . . . confined to England and Wales from Norfolk, Hertfordshire and Glamorgan southwards." This appears to be a new County record, and represents a northerly extension of the known range of this insect. C. C. PENNEY, 109 Waveney Drive, Chelmsford, Essex.

A NOTE ON REARING MYTHIMNA ALBIPUNCTA D. & S. (LEP.: NOCTUIDAE), THE WHITE POINT) — On the fourth of October 1986 I visited the sallows area of Dungeness as the weather conditions seemed favourable for migrants. I found myself in good company as Bernard Skinner, Michael Chalmers-Hunt and David Wilson were already in residence.

Migrants were scarce, however, in 42 species recorded only *Agrotis ipsilon* and *albipuncta* were thought likely to be migrants and, remarkably, *gamma* did not appear. David ended up with the *albipuncta* and as it was a female he promised to try and obtain some eggs and pass a few on to me.

As in all the best stories I had to wait, but three or four weeks later, on the day of the BENHS exhibition, David kindly passed on to me five young larvae.

One died two days later but the others thrived, feeding well on cocksfoot grass (*Dactylis glomerata*). The larvae were of different ages but by keeping the larger ones cool I managed to get all four to emerge as moths within two days of each other in early December. The larvae were reared in plastic boxes in a home made incubator held at 20-22°C. The larvae pupate readily in leaf mould, lying just under the surface. They turn from full-grown larvae to the prepupal shrunken condition in a very short time, sometimes only twelve hours, but when transferred to the pupating box they all managed to bury themselves and form a pupal chamber without problems. The larva stays like this for about four days, a relativly long time I think for such a moth.

The pupa has two distinguishing features, there is a single anal spike which is very like a short bristle about 1mm long. The pupa also has a hardened and darkened 'nose' area with a small raised keel. The pupa stage lasted for about three weeks.

Most of the moths emerged in the early morning as far as I could judge, I found one with limp wings at this time, and always the moths which had emerged were hardened off by the evening. In the second brood about 10% emerged in the early evening at around 6pm.

Both sexes are superficially similar but the males have a sooty black brush apparatus at the base of the underside of the abdomen which is always visible and makes sexing the moths very simple. The fates were smiling because the original four larvae produced two males and two females, and they were duly put in a muslin flight cage about eight inches on a side. The moths were allowed sugar water to feed on and were sprayed with water to increase the humidity to a level that I felt was appropriate. A small plant of *Dactylis* was introduced into the cage but it was not for two weeks that eggs were found. To my surprise these were exclusively tucked into the dead, dry leaves of the grass, as I had expected to find them amongst the green stalks. Copulation must be quick as no pairing was observed despite examining the box two or three times a day.

The eggs were white when first laid, but they soon change to pale yellowish-green and eventually they darken to the yellow colour which is shared by so many other species. The eggs do not darken further until they are about to hatch, this made me think that the eggs were infertile and it was with great rejoicing that the first small, looping larva appeared on 20th December. It seems better to keep the very small larvae at a lower temperature, say 16°C, as I lost a large number that were kept at 20°C. I found the young larvae rather fussy about their food. They like grass leaves which are mature, not old and yellowing, neither will they eat young, juicy basal leaves and sheaths. I found the small larvae hide, often communally, in the folded leaves and this made changing the youngsters a long process. COLIN HART, Fourpenny Cottage, Dungates Lane, Betchworth, Surrey.

EILEMA CANIOLA (HUBNER) AND CRYPHIA MURALIS (FORSTER) IN COUNTY WICKLOW – The note by David Brown (*Ent. Rec.* **99**:45) recording the recent discovery of a specimen of *E. caniola* in south-west Ireland prompts me to belatedly report the capture of a female of this species on the cliffs at Bray Head, Co. Wicklow (Irish Grid Reference O 288156) on 25th August 1984. This appears to constitute the first record of the species from the east coast of Ireland during this century. Bray Head is 22km south of Howth, Co. Dublin, from where the species was first recorded from Ireland by Barratt in 1860, and where it is believed to have later become extinct (Baynes, E.S.A., 1964. *A revised catalogue of Irish macrolepidoptera*.).

A male *Cryphia muralis* (Forster) was captured on the same

occasion at Bray Head. The ground colour of this specimen is white. This appears to be the first record of the species from eastern Ireland. – K. G. M. BOND, Zoology Dept., University College, Cork, Eire.

AN EARLY MACROGLOSSUM STELLATARUM L. (LEP.: SPHINGIDAE) – I would like to record that my father, Mr. Alan Gardner, noted a specimen of the humming-bird hawkmoth feeding on flowers at Killerton Gardens, Devon on 22.iv.1986. ANDREW GARDNER Jackson's Farmhouse, Charlecote, Warwick.

REMARKABLE ABUNDANCE OF LARVAE OF THE STAG BEETLE: LUCANUS CERVUS L. (COL.: LUCANIDAE). – On April 5th 1987, at Ravens Ait, an island in the Thames near Surbiton, my daughter Anita Chalmers-Hunt, was surprised to discover some forty full-grown larvae of this fine species. They were situated at the base of a large dead elm. I mentioned this fact to Mr. A. A. Allen, who said that he had never before heard of the larvae of this beetle being found in such numbers. – J. M. CHALMERS-HUNT.

EUPITHECIA VIRGAUREATA DOUBL. (LEP.: GEOMETRIDAE), THE GOLDENROD PUG IN DUMFRIES-SHIRE – A single female of this species was caught in the Rothamsted Insect Survey light trap which operates at Troqueer (Site No. 454, Mabie; O. S. Grid Ref. NX 951 707) on the night of 2/3.ix.1986. The identity of the specimen was confirmed by examination of the genitalia.

So far as I am aware this species has not previously been recorded from Dumfries-shire. My thanks are extended to Mr. M. Riley who operates the Mabie trap. ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Herts., AL5 2JQ.

THE DINGY MOCHA, CYCLOPHORA PENDULARIA CLERCK (LEP.: GEOMETRIDAE) – on 11.viii.1986 a fresh male of this uncommon species was taken in my garden m.v. trap, the third since 1984. The trap is between, although many miles distant from, the known localities in the New Forest and the Isle of Purbeck. R. R. COOK, 11 Greensome Drive, Ferndown, Dorset.

CRANIOPHORA LIGUSTRI SCHIFF. (LEP.: NOCTUIDAE) IN N. W. KENT – Chalmers-Hunt (*Butterflies and Moths of Kent* **2**: 267) suggested that this species may be extinct in North-west Kent, as there had been no reported sightings since the *Woolwich Survey* of 1909.

A single specimen turned up in my garden m.v. light near Dartford on 3.vii.1969 ( and was recorded, *ibid.* **3**: 252). Two further speci-

mens have occurred in my garden, 18.vii.1984 and 28.vi.1986. In this area, ash is plentiful and privet rather scarce. All three specimens were of the melanic form *coronula* Haw., which Kettlewell (*The Evolution of Melanism*, 1973) regards a geographic (i.e. Northern) melanic. B. K. WEST, 36 Briar Road, Bexley, Kent.

THE GENUS DACNE (COL.: EROTYLIDAE) IN RADNORSHIRE. – Records of this genus in Wales as a whole are rather sparse. It may therefore be worth recording the occurrence of both species in the above vice-county. A large *Polyporus squamosus* Huds. ex Fr. fungus growing from an ash on the banks of the River Wye near Glasbury was found in June 1986 to contain numerous *Dacne bipustulata* (Thunb.) and a single exponent of *rufifrons* (F.). (Mr. Tom Eccles kindly drew my attention to this likely source, grid ref. S01739). Joy (1932, *A Practical Handbook of British Beetles* **1**: 532), records both species as local, yet a survey of the literature shows that *rufifrons* is encountered noticeably less; on the other hand their UK distributions are similar. – D. A. PRANCE, 23 Brunswick Road, Kingston Hill, Kingston-upon-Thames, Surrey

**John Heath FRES**

It is with great sadness that we record, as we go to press, the death of John Heath on 5th July 1987. A distinguished and much respected entomologist, he first caught the "public" eye in the 1960's when he initiated the Lepidoptera recording scheme from the Biological Records Centre at Monks Wood Experimental Station. He published in this Journal in 1965 a brief paper entitled "A Genuinely Portable M.V. Light Trap" – which led to the commercial production and widespread use of the "Heath Trap". (*Ent. Rec.,* **77**:236-238). His major task in recent years was editing the successful series *The Moths and Butterflies of Great Britain and Ireland*, initially with Curwen Books, and latterly with Harley Books. He joined the editorial panel of the *Record* in 1978, and was elected President of the British Entomological & Natural History Society in 1982. A friendly and approachable man, John was always willing to impart sound advice to his less experienced colleagues, and will be sorely missed. Our deepest sympathy is extended to his family. Paul Sokoloff.

# Current Literature

**Hoverflies.** By **Francis S. Gilbert**, with plates by **Steven J. Falk.** Paperback, stiff covers, 8″ x 6″ approx., 66pp. Naturalists' Handbooks 5, Cambridge, 1986. £4.50. Also in hard covers, £15.00.

A notable addition this this excellent series of attractively-produced booklets; it would be hard to imagine a better or more comprehensive introduction to the family within the limits set.

The book is illustrated by four coloured plates (the front cover making a fifth), all taken from Stubbs and Falk's *British Hoverflies* (1983), and numerous clear and detailed text drawings. In the sections on biology and life-histories a great deal of information, much of it recent, is brought together and presented in an interesting way; others are devoted to classification, collecting and identification, dissection, etc. For keys, the reader is referred to the senior work cited above, but 42 generally common species are dealt with in some detail with a short diagnosis making recognitiion easy with the help of the figures. For the beginner, we feel it would have been informative to add, after the time of appearance of some of these, a brief datum on habitat (which would have taken up no extra space). Thus, it could have been noted that *Syritta* breeds in rotting vegetation and is therefore abundant in most gardens, whilst, in contrast, the *Sericomyia* spp. are flies of boggy heaths and moors, or swampy woods. The reviewer notes with approval the restoration of *Myiatropa* in place of the barbarous *Myathropa*; but the persistence of *Cheilosia 'paganus'* instead of *pagana* is a puzzle, seeming to stem from one of the many errors in the 1976 Check List. A useful bibliography precedes the index. Altogether this is a work to be thoroughly recommended. – A. A. ALLEN.

**Spiders – Webs, Behaviour and Evolution.** Edited by **William A. Shear**. Stanford University Press. 1986. 492pp $ 55, ISBN 0-8047-1203-4.

The manufacture and use of silk is the spider's great claim to fame. This book is entirely about webs (which might be loosely defined as aids to prey capture constructed of spider silk) but cannot claim to be comprehensive – many important web making families are hardly mentioned.

Every chapter is by a different author, the book having originated in a symposium (which I attended) on spider webs and behaviour which was part of the American Arachnological International meeting at Knoxville, Tennessee in 1981. Most of the chapters are derived from papers given in the symposium.

As this is an American book much of the research has been done on American species. However these are frequently closely allied to European (including British.) species and for many of us an appreciation of the general world picture adds greatly to the interest of our own fauna. An interesting chapter on prey specialisation describes adaptations for capturing moths which often escape from ordinary orb webs by shedding scales from their wings. Another describes methods of taking orb webs down. (Webs besides getting tatty, in time lose their adhesive properties). Two chapters deal with social spiders, one on communal orb web weavers and the other on the more completely

social spiders such as *Mallos gregalis* which builds a large communal sheet web housing up to 100,000 individuals. The penultimate chapter discusses the orb web and its various derivatives and finally the editor gives a most stimulating summary of the whole subject.

The book is fully illustrated in black and white. Photographs are printed (presumably for economy) on the same matt paper as the text and their quality is variable. Fortunately powdered webs on dark backgrounds come out well. The book is pleasantly bound and produced.

Scientific jargon has been kept to a minimum and the book can be recommended to all naturalists. FRANCES MURPHEY

**Butterflies of Europe Vol. 8.** Aspects of the Conservation of Butterflies in Europe by **O. Kudrna.** 1986. 323pp. 56 Figs including 19 colour plates of habitat. Published by AULA-Verlag, Wiesbaden. British Agent – E. W. Classey Ltd. Price c. £70 (DM.248 or DM.216 if all series have been ordered).

This is the second of a series of eight volumes to be published, the first, being a bibliography of European butterflies, possibly more useful to the librarian than the field entomologist. The series purports to be an authoritative work on the European butterflies and has been awaited with interest. This was to have been the final volume and considers in some depth the conservation of the European Rhopalocera, excluding the Hesperiidae.

The importance of butterflies as an indicator of ecological well-being is emphasised – their conspicuousness, their occurrence in almost all terrestrial habitats and their vulnerability to quite small changes in habitat. The main types of habitat are considered under six headings and the effect of man's management.

Chapter 3 discusses the reasons for the decline of butterflies – from the last glaciations to modern times; the affect of man (anthropogenic factors) covering drainage, grassland and agricultural management, forestry and urban spread. This chapter includes Stubbs' (1985) arguments for and against collecting and the author's conclusion that collecting has little affect other than where a species has already been depleted by other factors when it could lead to extermination, though the same result might probably eventually arise from the other factors.

"Red Data Books" serve as a political weapon to warn of impending losses but have little value if the area reviewed is too small. Blanket prohibitions of collecting as in West Germany and in areas of France achieve little in conservation terms, being a political panacea for the conservation lobby but are counter productive, diverting attention from the basic causes of decline and reducing the observations of field lepidopterists, the source of most of our knowledge

of status and habitat. Protecting individual species may also make them more desirable, concentrating the attention of the unscrupulous collector.

Chapter 5 surveys the distribution of species in all the European countries, including the Soviet Union and Turkey in Europe; the range of species, their decline and habitat vulnerability. This chapter concludes with a review of known ecological needs with some good pictures of habitat.

Chapter 6 proposes an outline comprehensive programme for conservation, suggesting a site register, special protection for acutely threatened or rare endemic species and guide lines for collecting and trade in butterflies. Any programme will require political action and this must be informed, requiring greater knowledge of the requirements of many species and the involvement of entomologists in formulating legislation. Much that has been done to-date has been ill-informed and modified by interests of more political weight.

I have left Chapter 4 till last as I consider it to be least useful and most controversial, also out of place in this Volume. I assume it is necessary to support the check-list of species. The heading is "Applied taxonomy of European butterflies" and considers taxonomy in theory and practice, definitions and a glossary of terms. The check-list and notes on it with a synonymic check-list follow. On the basis that much taxonomic revision is needed the author jettisons the work of those such as Higgins, Warren, Verity and others and produces a check list bearing little resemblance to those currently accepted by most European authors and lepidopterists. Genera are lumped while many accepted sub-species rise to specific status, based on Mayr's (1969) definition. "A species is a group of actually or potentially interbreeding populations which are reproductively isolated from other such groups", which might validate "*Papilio brittanicus*". He lists 15 species in *Pieris*, 7 in *Cupido*, 39 in *Polyommatus* (sinking *Lysandra, Agrodiaetus*, etc.), 28 in *Hipparchia*, 18 in *Boloria* (losing *Clossiana*) and 15 in *Melitaea*, disregarding Higgins' work on this group and his genus *Mellicta. Euphydryas aurinia*, which most accept has a cline ranging from *aurinia aurinia* Rott. in the north through *aurinia provincialis* Bdv. and *aurinia glaciegenita* Vty. to *aurinia beckeri* H-S in Spain, all appear as separate species. This can only cause confusion and adds nothing to the theme of conservation or our knowledge of the interrelationships of the butterflies.

This volume hardly merits the high price when compared with the series on British Lepidoptera from the Harley Books stable and it will be beyond the pockets of most British lepidopterists. It is hoped that its conservation message will reach the ears of those who have the power to do something to save our disappearing butterfly haunts. P. W. CRIBB.

# THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1986

By R. F. BRETHERTON* and J. M. CHALMERS-HUNT**

This was a very poor year for most species. Of the scarcer wholly immigrant species only 21 are known to us, as compared with 33 in 1985; and of half of those in 1986 we have single records only. *Heliothis peltigera* D. & S., of which nearly 70 imagines and over 30 larvae have been reported, was the only species with more than average abundance. Some of the usually common immigrants did relatively rather better; but of these only the diurnal *Macroglossa stellatarum* L. was unusually numerous and widespread. There were, however, some very interesting occurances. One butterfly, *Melitaea didyma* Esp., was effectively added to the British list by the fully authenticated sighting of four or five, of which two were caught, in a remote part of the Thames marshes of Essex on August 6th. The only previous record is of one caught supposedly near Dumfries, south west Scotland, in June 1866. Of *Trachea atriplicis* L. four were caught singly in north Suffolk, Essex and Kent. These are the first English records of this species, once resident in the fens district, since one in Suffolk in 1915; one was however, trapped at St. Saviour's Guernsey on July 27 1984. Also in Guernsey a single example of the noctuid *Polyphaenis sericata* Esp. was caught on August 14th – the first noted there since 1872. It is not known on the British mainland.

An example of *Agrotis crassa* Hübn. trapped at Playden, East Sussex on August 7th is the first confirmed record for England, though one was taken in co. Cork in 1984, and in 1986 eggs were obtained from a female in Guernsey, where it is believed to be resident. Other important records in 1986 are of *Actinotia polyodon* Clerck in Essex; *Semiothisa signaria* L., two in Kent and two from Sussex; two *Chrysodeixis acuta* Walker in Suffolk and Kent; a single *Chrysodeixis chalcites* Esp. in Kent; a single *Diachrysia orichalcea* in Sussex; a single *Lithacodia deceptoria* Scop. in Norfolk; and *Trichoplusia ni* in Dorset. A further feature of the year was the many reports of probably immigrant examples of resident species. Of these over 40 *Leucoma salicis* L. were prominent.

The pattern of migration which produced these rather curious results is fairly clear. In a spring which was cold and late both in Britain and most of western Europe there was no large immigration like that of April 1985, though some or all of the few *Vanessa atalanta* L. were probably immigrant. A very few of these with *Colias croceus* Fouc. and *Autographa gamma* L. were seen early in May,

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** 1 Hardcourts Close, West Wickham, Kent.

and rather more late in the month and the first days of June. But the main immigrations of these and the first of the scarcer species, came with an abrupt change to warmer weather after the middle of June, and especially in its last days in early July and in a further wave about July 17. They were mixed and overlapping in their origins, arrivals mainly on the east and south east coast of England overlapping with a major influx to the south west in the last days of June and again in mid July. These accounted for most of the scarcer species recorded in the year. There were later at least two immigrations in the middle and at the end of August, several in September and the first half of October, and a small one even about November 12, but they were almost confined to the usually common species. All the influxes except possibly that at the end of June appear from their composition and places of arrival to have come from relatively short distances across the Channel and southern North Sea. Arrivals from Scandinavia and North Africa were entirely lacking.

Of the commoner butterflies the first *V. atalanta* were reported at Worthing, West Sussex on March 15 (D. Dey) and at Bradwell-on-Sea, South Essex on March 18 (AJD); the last at Malvern, Worcestershire, November 15 (JEG). The most northerly were in Orkney, three on June 19. It was most abundant in September and early October, and at Spurn Point, South Yorkshire over 100 were counted on October 2 (BRS), and many others on October 3 and 11, flying south, presumably from some breeding place further north (RIL); it may be relevant that young larvae were found in early August near Wick, Caithness, though no adults were seen (SS). On the whole the species had a fairly good year, with remarkable good penetration into Scotland during its June influx. We have records from 27 English and Welsh counties and vice counties, the Isle of Man, 9 in Scotland, and three in south west Ireland.

*Cynthia cardui* L. On May 1, one was found comatose in a peat stack in Orkney, which flew after recovery (RIL), and is suspected of successful hibernation from 1985. Otherwise, the first were seen at Friston Forest, East Sussex on March 16 (per CRP), and on St. Agnes, Isles of Scilly (SN) and on Guernsey on May 20 (RA); the last on Penlee Point, East Cornwall, three October 16 (AS). Counts of those reported were March (1), May (14), June (54), July (19), August (31), September (42), October (13). There is no evidence of local breeding, except in Guernsey. Nowhere really abundant, but recorded in 22 English counties and vice counties, of which Surrey, Northants., and Worcestershire are wholly inland; the Isle of Man; Fife, Isle of Canna and Orkney in Scotland; and Guernsey. As yet we have no account of it in Ireland.

*Colias croceus* Fourc. was first seen as a pair at Thursley, Surrey on May 9 (A. Lindley), and the last near Culmstock, South Devon

on October 21. About 20 were reported from arrivals in late June and mid-July, and there were larger influxes in late August and September, when it was most numerous. It was, however, generally widely seen only from Dorset westwards: a very full list for South Devon (RB and DB), supplemented by some other records, gives a total of over 100 sightings in nearly 40 localities, and there were also many around Land's End, West Cornwall and on the Dorset coast, but with only few in Hampshire, Sussex and Kent. Inland we have records only in single figures from Surrey, Bedfordshire, Worcestershire and Shropshire; but in Berkshire, at Brimpton near Newbury 23 were counted from August 31 to October 8 by three observers of a single lucerne field. (A. Brigstock and P. Silver per BRB). There is, however, no evidence that successful local breeding contributed to the numbers there or elsewhere. In all, including some from co. Cork and Guernsey, the records probably cover about 180 insects, which indicates a rather poor year.

An "invasion" of *Pieris brassicae* L., said to be of the continental form, was watched at Langton Matravers, Dorset about June 10 (P. R. Grey), and there was a large clearly migratory influx to Orkney on June 15. Later, "hundreds" were seen along the shingle at Angmering, West Sussex on August 23; a mixed swarm of *P. brassicae* and *Artogeia rapae* at Bolt Head, South Devon on August 24, and many hundreds were seen coming off the sea all day at Rame Head, East Cornwall. Later still, on October 7, in South Devon and at Rame Head there were again hundreds of both species, which became scarce there afterwards. It is also noteworthy that a single example of *Aglais urticae* was seen on the Forties Delta oil rig in the North Sea off the Aberdeenshire coast on August 30 (per MRY).

*M. stellatarum*, with over 200 recorded, as compared with a mere 30 in 1985, has already been noted as having a good year. The first was seen at Broadway, Worcestershire on May 23, (per JEG), and the last at Lamorna Cove, West Cornwall on October 20 (GEH). Its main abundance was due to large immigrations from June 13 to mid July, but there were much smaller influxes in late August and again from October 10 to 15. Larvae were found in late July and August as far north as Meals in Cheshire and Flamborough in Yorkshire, and adults from these may have caused a few of the later records. Distribution was wide. Though it was commonest along the south and south east coasts, we have records from 26 English counties north to Westmorland; in Scotland from Roxburgh, Fife, Argyll and Orkney; in Ireland from mid co. Cork; and in Guernsey the report is of a very good year, with many adults and larvae.

*Autographa gamma* L. was as usual the commonest of the nocturnal immigrants. But several recorders commented on its relative scarcity, and nationally its numbers were probably well below

average, and unusually small away from the coasts. It seems, however, to have been commonest on the east coast, where traps at Bradwell-on-Sea, South Essex scored a total of 3,600, very much in excess of that for 1985; it was also in good numbers at Muston on the Yorkshire coast, and said to be quite common at Aberdeen. In contrast, at Bramley, Surrey only 58 were trapped, against 90 in 1985 and a ten year average of 96. It was first noted at Portland, BO, May 21 (MR), Langton Matravers, Dorset on May 23 and last at Bradwell-on-Sea, December 8 (SD); the most northerly, in Orkney, on June 24 (RIL). The usual immigrations in May and June, though beginning late, were fairly strong. Later migrations were frequent, giving peak scores in many places in the first week of September. It was seen in most English coastal counties, but inland reported only in Middlesex, Surrey, North Hampshire, Berkshire and Worcestershire. In Scotland it reached the Isle of Canna, Ross-shire and Sutherland, as well as Orkney and Aberdeenshire.

*Agrotis ipsilon* Hüfn., after a single early record at Bradwell-on-Sea on April 16 (AGD), with the last also there on December 5 (CD), showed a rather similar pattern of dates, but a much smaller and later total build-up, and narrower distribution. Three were reported in Orkney in July; but we have no other Scottish records. In England it occurred as far north as Spurn Point and Muston in Yorkshire and at Beetham, Westmorland; but nowhere commonly except at Bradwell-on-Sea, and inland it was only reported in Middlesex, Surrey, North Hampshire, North Wiltshire, and Berkshire. It seems to have been commonest in October, and the detailed pattern of the records suggests that local breeding from earlier arrivals contributed to its numbers then.

*Peridroma saucia* Hubn. About 125 were recorded; but 46 of these were at Bradwell-on-Sea, almost all concentrated between October 14 and the last on December 2 (SD). The remaining 70 were thinly spread between 25 different localities none of them reaching double figures. The first was noted at Portland B.O.,Dorset on June 10, and the others all round the south and east coasts from Scilly to South Essex, with singles in East Suffolk, Spurn Point in Yorkshire, and even in Orkney on September 29; and in Monmouthshire on the west; there were also three in Surrey on October 12 and 13, and one in Warwickshire on October 14.

The Pyralid *Udea ferrugalis* Hübn. is usually relatively under-reported; but the 80 records received show a date pattern similar to that of *P. saucia*. The first was at Winchester, North Hampshire on July 8 (DHS), but two thirds came from early October to the last on December 3 at Bradwell, South Essex and Leigh, Surrey, with a large concentration at Trebrownbridge,East Cornwall in October about the middle of that month. It was reported in 11 English coun-

ties and in co. Cork East; all these were coastal except North Hampshire, Berkshire and Surrey.

*Nomophila noctuella*, with about 160 reported, was very thinly spread, both in place and time with seldom more than one or two seen together anywhere. The first was at Bradwell, S. Essex on May 28 (SD), the last, and most northerly, at Beetham, Westmorland, on October 13 (JB). Records came from only 9 English counties, of which only Surrey and Warwickshire were inland; from Guernsey, and co. Cork East in Irleand.

*Plutella xylostella* L., which is frequently over-looked, was fairly numerous, with some 200 reported by 16 recorders. The first was on May 20 at Hampstead, Middlesex (RAS), the last at Trebrownbridge, East Cornwall on November 11 (AS). There were clearly many arrivals in June and July, from which local breeding may have raised numbers later. It was noted in all the English south coast counties and inland and northwards in Middlesex, Yorkshire v.c.61, Westmorland; in Scotland in Aberdeen and Orkney; in the Isle of Man; in Ireland in North and South Kerry, co. Cork East, co. Tipperary and co. Wicklow. There was however, no sign of massed arrivals such as have sometimes been seen of this species. Singletons of a melanic form came to light at West Wickham, Kent, 14.8 and 22.8, and Dungeness, Kent, 27.9 (J.M.C-H).

The usually scarcer immigrants are fully detailed in Annexe II. Most of the rarities have already been mentioned. The scarcity of familiar species such as *Rhodometra sacraria* L., *Orthonama obstipata* Fab., *Acherontia atropos* l., is notable. The only one which was relatively common, *H. peltigera*, needs some analysis. First seen on June 19 in Guernsey, the first known arrivals on the mainland were at Dungeness, East Kent and at Mawnan Smith, West Cornwall on June 27, to be followed by many more in the next few days and by later waves about July 7 and 12, to a total of 50 by July 21. Later, eight were reported between September 4 and 30 and eight between October 2 and 12. All these except four Dungeness and two at Swanage, Dorset on October 10 were singles. It is not possible to be sure whether these were immigrants or offspring from the June and July influxes. In all some 70 imagines were recorded from 16 English counties and vice-counties, a single from Ayrshire in Scotland, and at least four from Guernsey. Larvae of various sizes but not in large numbers, were found between July 8 and October 12, all near the coast, at Dungeness, East Kent, Eastbourne and Newhaven, East Sussex, and Lyme Regis, Dorset. But is seems likely that the cool summer prevented most, if not all, from reaching maturity.

We have been asked to draw attention again to our practice, in which we follow other biological organisations, of using the Watsonian counties and vice-counties as the basis for recording, in order

to keep continuity despite the many and extensive changes in administrative boundaries and postal districts since 1892, when that system was devised. For whole counties it usually follows the ancient historic boundries.

The number of recorders, both direct and indirect, has again grown, and we thank all of them. We do however badly need resident recorders in Wales, and more in Scotland would be very welcome.

## ANNEXE I

### Names of direct recorders

Names of recorders who have sent their records to us directly are listed below. Many of them have also included records obtained from other observers, to whom we are grateful. It is not practicable to list all their names, but many of these appear in Annexe II.

Austin, R., Bainbridge, Maj. Gen. H., Baker, B. R., Baldock, D. W., Baldwin, A. J., Birchenough, R. F., Bond, K. G. M., Botwright, G., Brabbington, J., Bradford, E. S., Bretherton, R. F., Bretherton, M. F., Brigden, B., Bristow, R. and Bolton, D., Brooks, Miss M., Brown, D. C. G., Burton, G. N., Cade. M., Campbell, J. L., Chalmers-Hunt, J. M., Collins, C. B., Collins, G. A., Costen, Dr. P. D. M., Craik, Dr. J. C. A., Davey, P. A. D., Dey, D., Dewick, A. J., Dewick, S., Eastwick-Field, Lt. Col. G. E., Eley, R., Ellefsen, G. E., Ellis, M. J., Emmet, A. M., Evans, K. G. W., Eve, H., Fairclough, R., Fenn, J. L., Foster, A. P., Gray, G., Grey, P. R., Green, J. E., Halsey, M., Halstead, A. J., Hancock, E. G., Hardie, P. J., Harman, T. W., Harmer, A. S., Harwood, N. W., Haynes, R. F., Heath, J., Higgs, G. E., Hipperson, D., Hulme, Dr. P. D., Jenner, H. E., Kinnear, P. K., Knill-Jones, S. A., Lane, R. E. & C. E., Lees, G. G. W., Lorimer, R. I., Masters, M. S., Michaelis, H. N., Miller, J. R., Millington, G. A., Moore, B. W., Mount, S., Nash, S., Odell, S., Owen, D., Owen, J. A., O'Heffernan, L., Palmer, A. R. M., Parsons, M. S., Peet, T. N. D., Payne, J. H., Pelham-Clinton, E. C., Penhallurick, R. D., Plant, C. W., Pons, M. S., Pratt, C. R., Rogers, M., Rollins, C. G., Rutherford, C. I., Saul, K., Softly, R. A., Skinner, B., Smith, Dr. F. H. N., Sokoloff, P. A., Sterling, Col. D. H., Sterling, M. J., Sterling, P. H., Spalding, A., Spence, B. R., Stallwood, B. R., Swanson, S., Terry, M. G. W., Tucker, V., Tweedie, M. F. W., Walters, J. M., Waring, P. M., West, B. K., Wild, E. H., Wilson, D. E., Winter, P. Q., Young, Dr. M. R.,

(*to be concluded*)

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THE BEE-FLY, BOMBYLIUS MAJOR L., ON MUD — on 12.iv. 1987, in Leigh Woods, Bristol, I observed a bee-fly flying along a path, every so often alighting on the damp mud to probe with its long proboscis. It was never still for more than a few seconds, but whilst probing the wings stopped beating. This is in marked contrast to the feeding behaviour on flowers, when the insect remains hovering, steadying itself with two legs resting on the flower. R. G. BARRINGTON, Old College Arms, Stour Row, Shaftesbury, Dorset.

# THE DISTRIBUTION OF THE GENUS *LEPTURA* L. (COL.: CERAMBYCIDAE) IN GREAT BRITAIN

By RAYMOND R. UHTHOFF-KAUFMANN*

## Introduction

Over a century ago Canon W. W. Fowler (1883) wrote an article including references to the British Longicornia; this was followed by a short series of papers on the same subject some 15 years later, which appeared in this periodical (Donisthorpe, 1898); thereafter another half-century was to elapse before the appearance of a collated paper on the Longicorn Coleoptera *in toto* (Kaufmann, 1948), published a few years prior to the late Evelyn Duffy's 1952 Handbook on the Cerambycidae. This present paper, therefore, reviews the current ecological distribution of one of those small but handsome and elegant genera of our native Coleoptera.

The genus *Leptura* L., sometimes included with *Strangalia* Serv. (Joy, 1932) or in part split into other groupings by the taxonomists, has always excited the interest of the very earliest of our entomologists: the occurrence of our half-dozen native species (with the addition and deletion of two still controversial items) has been noted in almost every British catalogue since the appearance of the very fullsome and informative systematic list published by Stephens in 1829.

It is to be said, nevertheless, that such was the enthusiasm and avidity shewn by many of the early- and mid- 19th century Coleopterists that a number of Cerambycids, quite common then, inevitably were over-collected to near extinction and rapidly disappeared from their haunts; this happened almost certainly, to mention but one of many examples, in the case of *Obrium cantharinum* L.

Despite all that, and the inevitable depredations of later years, but more particularly, the wholesale spraying of herbicides and the increasingly heavy pollution of the atmosphere since the war, the Longicorns, because they are largely xylophagous, seem to have survived surprisingly well.

In the latest British catalogue (Kloet and Hincks, 1977) the *Leptura* species, *inter alia*, are listed in alphabetical order; this may be a matter of convenience, but as it does not correspond with the more usually acceptable keys, the species referred to here are assigned to their customary systematic arrangement (Freude, 1966).

To conserve space, county and vice-county symbols follow Balfour-Browne's 1931 paper: italicised letters indicate that it is

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from there that the insect has been widely taken; bracketed letters imply doubtful or uncertain records; a dagger (†) means a specimen imported from elsewhere in the country or a fortuitous example.

## LEPTURA *sensu stricto*

*L. (Anoplodera* Muls.) *sexguttata* F.

A species still largely restricted to a few counties in the south of the country. There are some scanty more northerly records, where it has been but rarely found, and others from the Principality and Ireland.

ENGLAND: EY, LN, ND, NY, *SH*, SR, SW, WK. WALES: MN. IRELAND: NK.

Described as a 'relict species of old forest areas' (Skidmore, 1969), the Welsh specimen was swept from under an oak some 20 years ago. This is a very local beetle, occasionally quite common in a propitious summer. It is usually taken by sweeping grasses and flowers, including brambles, ground elder, kingcups and *Viburnum*, and by beating trees and shrubs in blossom such as dog rose, hawthorn and holly. It has also been captured off pine needles. Emergence months are May to July; there is a solitary January record. It is still to be found in that most popular of areas, the New Forest, where it has been seen as recently as 1985. The larvae feed on oak and beech.

A great number of aberrations, based upon the pattern of the elytral maculations, are described from the Continent among which the entirely melanic form is regarded as extremely rare (Freude, 1966), but the only British kind first catalogued (Marsham, 1802; Stephens, 1829) is the ab. *exclamationis* F., found with the type in SR and SW.

*L. livida* F.

This is the smallest species of the genus and by far the commonest, although for the most part confined to the south, the West Country and the Midlands. A local beetle, sometimes abundant on vegetation in the sheltered parts of the cliffs in southern and western regions. It occurs by sweeping grasses, *Achillea*, brambles, chamomile, *Chrysanthemum leucanthemum*, hedge mustard, *Heracleum* (where it is difficult to spot as it hides under the florets with only its head and antennae protruding), *Lepidium, Matricaria, Solidago* etc. Further inland it may be beaten off hawthorn blossom and horse chestnut. It was once recorded from Hoghton Woods, Lancs. about 150 years ago. The only other northern record is a vague one from the Border country. May to August.

ENGLAND: *BD, BK,* BX, CB, *DT, EK,* EN, *ES, EX,* GE, GW, (HF), *HT, HU, IW*, L, LN, LR, MM, *MX, ND*, NE, NM, NS,

*OX*, *SD*, SE, *SH*, SL, *SR*, ST, SW, WC, *WK*, WO, *WS*, WX. WALES: GM. SCOTLAND: (BW). IRELAND: RO.

The larvae are found in oak and other (unspecified) deciduous trees (Freude, 1966) and in conifers (Lyneborg, 1977) – which seems unusual but possible as the adult had been found infrequently on firs.

*L. sanguinolenta* L.

With a distribution focused upon two centres in Great Britain – Scotland and East Anglia – but there are a few southern and western records. It is remarkable that this species has been found in two regions of so different a nature and so widely separated; the modern Coleopterist, anxious to add this rare insect to his list of captures, is nowadays advised to travel to the far north of Scotland, where it may be found in highly localized parts. This small, rather vividly coloured beetle occurs from June until September in afforested areas on pines and sometimes rowan trees. It settles, too, on *Heracleum* growing in forest rides.

ENGLAND: EN, ES, HU, L (Stephens, 1831, 1839), NE, SD, SH, SR, WY†. SCOTLAND: EI, EL.

The larva attacks dead conifers, especially firs and spruce (Freude, 1966) and fire-charred pines (Duffy, 1953).

*L. rufa* Brullé†.

Its continued inclusion, even as a very dubious British species, in our latest catalogue (Kloet and Hincks, 1977) verges on the absurd. It rests entirely upon the finding of a single example 120 years ago. The beetle does not even occur in central Europe (Freude, 1966) being confined to the west of the Continent and at the other extreme, Greece and Turkey: even there it is a rarity.

'*L. rufa* has been comparatively recently introduced, and rests on one specimen, so that it requires further confirmation before it can be admitted to our lists' (Fowler, 1890). Fowler (*op. cit.*) adds that the example in question has never 'occurred before or since, and it might have been imported in timber'. '. . . decidedly, . . . it was imported' (Donisthorpe, 1898).

This has not prevented its being listed as an indigene, thus, from Rye (1866) onwards the name recurs in several of the catalogues (Morris, 1865; Pascoe, 1882; Fowler and Matthews, 1883; Sharp, 1883; Bennett, *ca.* 1893; Newbery and Sharp, 1915). Very rare' (Cox, 1874) (!).

The history of *L. rufa* is quite simple; a single male was once taken by a Mr. Thorncroft at Holm Bush, Sussex in the summer of 1865. The only real question that remains is:– did Mr. Thorncroft find it in East or West Sussex? It so happens that in the gazetteer there are two localities in that county, each a seat; the one is near Cuckfield, East Sussex and the other near Horsham, West Sussex.

To confuse matters further there are also a Holmbush House, Steyning and a Holmbush Manor, Horsham, both located in West Sussex. Cuckfield and Horsham are only some 16 kilometres apart; perhaps Mr. Thorncroft found his beetle on the border separating the two vice-counties. Holmbush, Brighton (Fowler, 1905)! He might at least have been a little more explicit* – a remark which could equally be directed at *L. rufa's* highly questionable place in the 1977 catalogue.

*L. scutellata* F.

This is a species which is primarily associated with ancient forests; it is in consequence largely confined to the older trees in localities such as the New Forest, Windsor Forest, and what remains of the Epping and Hainault Forests. There is also an old reference from Sherwood, where it was rare. It is not known from either Wales or Scotland, but there is a record from Ireland.

ENGLAND: BK, HT, L. NM, *SE, SH,* WK. IRELAND: NG.

A local, occasionally quite common rather than scarce beetle, found on decaying beech, birch, hornbeam, oak, and most recently attacking sycamore (J. A. Owen). It can be found from March onwards until August. It has been taken as well off brambles, flowering hawthorn and *Oenanthe*. It is sometimes found crawling somewhat sluggishly on freshly-cut faggots and by stripping the bark off cut logs. Although the larva lives in the other trees named above, the favoured pabulum is the beech from which it has been more often than not recorded.

The sexes are quite distinct – apart from build – and are recognized by the scutellum of the male, which is densely covered with silver hairs; in the female, the pubescence is golden in colour (Freude, 1966), coloration which is rigidly distinct (Linssen, 1959) and without any gradation of shades.

*L. rubra* L.

It is most remarkable that a century was to pass before this insect was re-established as a native in Britain. There seems little doubt that the beetle indicated by Dr. W. Turton and named in a footnote (Stephens, 1829) as '*rubrotestacea* Illig., . . . ♂ *Le. testacea* Linn., . . . ♀ *Le: rubra* Linn.' refers to the differently coloured sexes of this species; and again (Stephens, 1831), '(. . . *mas., elytris pallide testaceis immaculatis: foem., thorace supra elytrisque rubris immaculatis* . . .. Said by Turton to be indigenous)!. 'Improperly indicated as British' (Stephens, 1839). These dismissive remarks evidently resulted in the omission of *Leptura rubra* from all the catalogues onwards until 50 years or so ago (Beare, 1930), when it was finally restored to the list following its re-discovery in 1918 (Thouless, 1919), when the latter found it in century-old pinewoods in Horsford.

*The locality for *L. rufa* is now known to be Poynings, Sussex.

It had been feared that the large areas of Norfolk taken over by the Forces during the last war might have adversely affected the economy of this beautiful beetle (Kaufmann, 1948, p.75: fn. 1), but that was far from being the case; indeed, *L. rubra* has spread amazingly well in East Anglia and at times is common enough in a number of places to be picked off Umbellifers growing along the wayside of the roads and tracks on Forestry Commission lands now open to the public.

A localized, quite common beetle in the two eastern counties: this is contradicted (Harde, 1984), who states, '. . . extremely scarce in Britain'. It is also recorded from the Thames basin and Woolmer Forest, North Hants.

ENGLAND: BK, *EN*, NH, OX, WN, WS.

The males are usually found on flowers, *Heracleum* in particular, sometimes on bracken and hawthorn blossom. On hot sunny days – the end of July and beginning of August are the most favourable – they may be netted in flight. The females are less active. They are normally found sitting on rotten larch and firs (Duffy, 1953). May to September.

The larvae develop in the stumps, branches and roots of conifers (Freude, 1966), including spruce and pine (Lyneborg, 1977), who adds that it is destructive to fencing posts and untreated, wooden telegraph poles; the latter is confirmed (Harde, 1984) but discounted (Freude, 1966), who perhaps had metal posts in mind.

The sexes are easily separated: the males have a thorax black above and testaceous elytra; the females, which are larger, have pronotum and elytra bright, almost vermilion red.

*L. fulva* Deg.

With a scattered distribution but in the main a southern species. It is unknown in Scotland.

ENGLAND: BK, DY, EC, HF, IW, NH, SD, *SH*, SW. WALES: GM. IRELAND: NG.

A beetle which is largely associated with rotten timber, including old railway sleepers (many examples in collections have come from this source) and decaying posts. It may also be swept from grass, *Achillea, Angelica, Heracleum, Spiraea,* thistles and wild roses. It is a very local beetle, rarely common. The larvae are found in aspen and beech (Freude, 1966) and the imagines may be captured from May onwards until August.

*L. virens* L.

This is a very attractive-looking beetle with a greenish, almost velvety appearance, about which there seem to be some very con-

flicting views over its retention in the British lists: '. . . very rare and doubtfully indigenous; recorded by Stephens from the Forest of Dean; and from Scotland; one or two other specimens are in our collections. Dr. Sharp does not include the species in his Scottish list, and it might perhaps with advantage be omitted or placed with the doubtful species' (Fowler, 1890). ' . . . Of this species . . . I can learn nothing reliable, and consider it more than doubtfully indigenous' (Donisthorpe, 1898). 'Very rare; specimens have been taken in Scotland, and I possess a pair from the forest of Dean' (Stephens, 1831). 'Decayed trees: Forest of Dean, June' (Stephens, 1839).

'Stephens's record for the Forest of Dean is corroborated by the existence of an example in good condition in the Dale collection at Oxford, labelled as from that locality, "from A. Ford's coll. 1896 (C. W. Dale) . . . " (Allen, 1968). The specimen is a male (Walker, 1932).

Mr. Allen opines that it 'should be restored to our list as extinct species', *loc. cit.*

Elsewhere (Allen, 1967) he expresses '. . . a catalogue of the entire known fauna of a given region should . . . include (marked as extinct . . . ) species known . . . on reasonable evidence to have bred here up to some time in the previous century . . . it would seem premature to pronounce any species wholly extinct at all events in the Coleoptera. It is illogical as well as inconvenient to omit from our list species still extant as documented specimens in our collections, especially if supported by published records, . . . unless there are good grounds for . . . suspecting them of being mere importations. . . The fact that there are in the Coleoptera . . . possible cases too doubtful to qualify for admission is no reason for excluding the relatively few clear ones . . .'

The species is omitted from the second Kloet and Hincks catalogue, but it is named as British – 'Rare' (Cox, 1874) – and stands in many of the catalogues (Stephens, 1829; Curtis, 1837 *et al.*) until the second decade of this century (Newbery and Sharp, 1915); thereafter it was dropped.

A case has certainly been made for the inclusion of *L. virens* as once native but now extinct in the next edition of the British catalogue – which is more than can be said of *L. rufa* Brullé.

Enquiries up-to-date as to the whereabouts of the reputedly Scottish example of *L. virens* have so far proved negative.

ENGLAND: GW. SCOTLAND: (?); no further information.

In Europe – it is not regarded as British (Harde, 1984) – the imago is found on flowers in mountainous and sub-alpine regions, June to August; the larva feeds in conifers (Freude, 1966), including firs, spruce and pines (Picard, 1929).

## References

A fuller bibliography (Kaufmann, 1948) covering over forty English counties, and the Welsh, Scottish and Irish Cerambycid fauna, complements the list that follows.

Allen, A. A., 1967, A review of the status of certain Scarabaeoidea (Col.) in the British fauna: with the addition to our list of *Onthophagus similis* Schriba, *Entomologist's Rec. J. Var.*, **79**: 202.

————, 1968, Notes on the genus *Cerambyx* (Col.) in Britain, and on the British status of two other Cerambycids, *Entomologists' mon. Mag.*, **104**:216.

Beare, T. Hudson, 1930, *A Catalogue of the recorded Coleoptera of the British Isles.* London.

———— and Donisthorpe, H. StJ. K., 1904, *Catalogue of British Coleoptera.* London.

Bennett, W. H., *ca.* 1893, *A new exchange list of British Coleoptera. n.d.*

Browne, F. Balfour-, 1931, A plea for uniformity in the method of recording insect captures, *Entomologist's mon. Mag.* **67**: 183-93.

Cox, H. E., 1874, *Handbook of Coleoptera,* **2**: 313-14. London.

Crotch, G. R., 1863, *A catalogue of British Coleoptera.* Cambridge.

Curtis, J., 1837, *A guide to the arrangement of British Insects,* 2nd. ed. London.

Donisthorpe, H. StJ. K., 1898, Notes on the British Longicornes, *Entomologist's Rec. J. Var.* **10**:248.

————, 1931, An annotated list of the additions to the British Coleopterous fauna, *Entomologist's mon. Mag.*, **67**:69.

Duffy, E. A. J., 1953, *A monograph of the immature stages of British and imported Timber Beetles.* London.

Fowler, W. W., 1883, Natural localities of British Coleoptera, 13, *Entomologist,* **16**:78.

————, 1890, *The Coleoptera of the British Islands,* **4**. London.

————, 1905, Coleoptera in *Vict. County Hist.*, Sussex, **1**.

————, and Donisthorpe, H. StJ. K., 1913, *The Coleoptera of the British Islands,* **6** (Supplement). London.

———— and Matthews, A., 1883, *Catalogue of British Coleoptera.* London.

Freude, H., Harde, K. W. and Lohse, G. A., 1966, *Die Käfer Mitteleuropas*. Krefeld.

Garland, S. P., 1983, Beetles as primary woodland indicators, *The Sorby Record*, **21**:3-39.

Harde, K. W., 1984, *A field guide in colour to Beetles*, English ed., Hammond, P. M. London.

Joy, N. H., 1932, *A practical handbook of British Beetles*, 2 vols. London.

Kaufmann, R. R. Uhthoff-, 1948, Notes on the distribution of the British Longicorn Coleoptera, *Entomologist's mon. Mag.*, **84**: 66-85.

Kloet, G. S. and Hincks, W. D., 1945, *A Check list of British Insects*: Coleoptera. Stockport.

————————, 1977, *Check list of British Insects*, **11** (3), Coleoptera and Strepsiptera, 2nd ed. London.

Linssen, E. F., 1959, *Beetles of the British Isles*, **2**:139. London.

Lyneborg, L., 1977, *Beetles in colour*, English ed., Vevers, G. Poole (Dorset).

Marsham, T., 1802, *Entomologia Britannica,* **1**, Coleoptera. London.

Morris, F. O., 1865, *A catalogue British insects in all Orders* (*sic*). London.

Newbery, E. A. and Sharp, W. E., 1915, *An exchange list of British Coleoptera*.

Pascoe, F. P., 1882, *The student's list of British Coleoptera*. London.

Picard, F., 1929, *Faune de France*, **20**, Coleoptera, Cerambycidae. Paris.

Planet, L-M., 1924, *Les Longicornes de France*, Encycl. Ent., **2**. Paris.

Rye, E. C., 1866, *Catalogue of the British Coleoptera* in British Beetles. London.

Samouelle, G., 1819, *Entomologist's useful compendium.* London.

————————, 1833, *Entomological cabinet*, **1**. London.

Sharp, D., 1883, *Catalogue of British Coleoptera*, 2nd. ed. London.

———————— and Fowler, W. W., 1893, *Catalogue of British Coleoptera.* London.

Skidmore, P., and Johnson, C., 1969, A Preliminary List of The Coleoptera of Merioneth, *Entomologist's Gaz.*, **20**: 209.

Stephens, J. F., 1829, *A systematic catalogue of British Insects.* London.

————————, 1831, Illustrations of British Entomology, *Mandibulata,* **4**. London.

————————, 1839, *A manual of British Coleoptera*. London.

Thouless, H. J., 1919, *Leptura rubra* L. in Norfolk, *Entomologist's mon. Mag.,* **55**: 174-5.

Turton, W., 1806, *A general system of Entomology,* **2**. London.

Walker, J. J., 1932, The Dale Collection of Coleoptera, *Entomologist's mon. Mag.,* **66**:106.

Waterhouse, G. R., 1858, *Catalogue of British Coleoptera*. London.

————————, 1861, *Pocket catalogue of British Coleoptera.*

# NOTES ON *SWAMMERDAMIA COMPUNCTELLA* HERRICH-SCHÄFFER (LEPIDOPTERA: YPONOMEUTIDAE)

By DAVID AGASSIZ*

This species was added to the British list by Metcalfe (1933) who concluded "The species seems to be widely distributed and is probably overlooked. I possess seven specimens from Surrey, E. Sussex, Broadstone (Dorset) and Rannoch."

During the last decade or two the species has been noticed in Worcestershire, Herefordshire, Staffordshire, Yorkshire and in various parts of Scotland. The paucity of records from the south of England has often puzzled me. My own specimen from the New Forest, 19.vi.1971 (Goater, 1983) seems to be the only one from south of London since Metcalfe's day.

Recently I had the opportunity to examine Metcalfe's collection and I was surprised how variable his series seemed since my bred specimens from Scotland (Agassiz, 1984) were remarkably constant in size and appearance. On closer inspection I became doubtful about some of the determinations. One specimen labelled 'Surrey, 12.vii.38' looked like *Paraswammerdamia lutarea* (Haw.) which would fit the date better. Dissection of the female genitalia proved it to be so. Two female specimens labelled 'Surrey, 12.v.30' and 'Broadstone, 31.v.21' looked like *S. caesiella* (Hübn.) and dissection of the first confirmed this opinion. A fourth specimen labelled 'Westcott, 25.v.39' resembled *P. albicapitella* (Scharf.) (= *spiniella* (Hübn.) and this was confirmed by external examination of the male genitalia. That left three specimens correctly determined as *compunctella*; bearing the data 'Rannoch, 26.vi.18; Tilgate, 17.vi.30; and East Sussex, 11.vi.21'.

It will be noted that of these seven specimens in the Metcalfe collection two had been added after 1933. He had given two specimens to Pierce for dissection and illustration in Pierce & Metcalfe (1935). These specimens are labelled 'Tilgate, 17.vi.30' and 'W. Surrey, 21.v (or vi).31.

It must be something of a record for an entomologist to discover a species new to Britain and then to bequeath a series of that species which contained no less than four different species! This is more forgiveable than it sounds, for in the British Collection in the British Museum (Natural History) the series of *S. compunctella* comprised five specimens of three different species, none of which was *compunctella*! There are however two other British specimens of *S. compunctella* in the BM(NH), one in the Ford collection labelled 'Westcott, 16.vi.36' taken and correctly determined by Metcalfe;

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another is in the Bankes collection, unidentified but separated from other *Swammerdamia* species, and labelled 'P. Mason, 1892'. P. B. Mason was a collector who lived near Burton-on-Trent so we may speculate that the specimen came from the Midlands.

The date of Metcalfe's West Surrey specimen is not clear. It looks like v. (May) but has the dot of the i of vi. (June). If we assume that the life history of the species is the same in southern England as in Northern Scotland a date for the adult before the end of May is hardly conceivable. The larva has to complete its growth on the new shoots of rowan which do not open until into May, there is then the pupal period to be gone through before emergence. A date after the end of June is equally unlikely in England, although in Scotland it hangs on well into July. In mid-June allied species are less likely to be encountered so it is worth being watchful for *compunctella* at that time.

The complete list of southern records is as follows: Two specimens from Tilgate and one from East Sussex, which could be the same locality; one specimen from Westcott (near Dorking), Surrey and another from West Surrey; and one from the New Forest, Hampshire.

**Acknowledgements**

My thanks are due to Charles Copp of Bristol City Museum & Art Gallery for permission to examine critically specimens in the Metcalfe collection; to Dr. I. D. Wallace of the Liverpool Museum for information about the Pierce collection; to J. M. Chalmers-Hunt for historical information concerning P. Mason and to K. Tuck at the British Museum (Natural History) for his assistance.

**References**

Agassiz, D. J. L. (1984) Microlepidoptera in Wester Ross, *Entomologist's Rec. J. Var.* **96**: 12-13.

Goater, B. (1983) New and confirmed records of Lepidoptera in Hampshire and the Isle of Wight since 1974, *Entomologist's Gaz.* **34**: 247-255.

Metcalfe, Rev. J. W. (1933) *Swammerdamia compunctella*, Herrich-Schäffer, *Entomologist* **66**: 141-2.

Pierce, F. N. & Metcalfe, Rev. J. W. (1935) *The genitalia of the tineid families of the Lepidoptera of the British Islands.* xxii, 114 pp. 68 Pls. Oundle.

[**Postscript** Dr. M. W. Harper permits me to add that he bred a specimen of *compunctella* in early June 1987 from a larva found on hawthorn (*Crataegus* sp.) in Herefordshire in April 1987.]

# REARING THE PAINTED LADY *CYNTHIA CARDUI* L. WITH PARTICULAR REFERENCE TO THE USE OF SEMISYNTHETIC DIET

By BRIAN O. C. GARDINER*

*(Concluded from p168)*

**The semisynthetic diet and its preparation**

When faced with trying to establish a species on a semisynthetic diet the first choice is to use one which has already been shown to be successful, either with a similar related species, or which is known to be accepted by a range of disparate species, and this was done with the painted ladies, the first choice being the diets used for *P. brassicae* and for *Manduca sexta*. Both of these have been shown to be acceptable to a wide range of Lepidoptera. (See Gardiner 1978 for both range and diet formula). Although some of the larvae started to eat on both these, neither the initial percentage starting to feed, nor the survival rate was acceptable and therefore a new formulation was made using, since the colony was already flourishing so well on nettle, dried nettle leaf in the diet. This the larvae at once took to and, much to my surprise, would switch to eating the diet even after they had been fed on nettle for their first two or three instars. Now this is something that neither *P. brassicae* nor *M. sexta* would ever do. Once they had tasted the real thing they will not accept diet. (David & Gardiner 1966 & personal observation).

The formulation finally settled on is basically that which has been in use over many years for rearing *P. brassicae*. The main change is the substitution of dried nettle leaf (which is a commercial product sold as "nettle powder") for the dried powdered cabbage leaves or sinigrin flavouring required by the cabbage white. For simplicity of making up the diet, the quantities of the ingredients were varied slightly from previous published formulae (see Gardiner 1978) to give rounded whole quantities for measuring out. The basic formula is presented in Table 2 and that of the vitamins used in Table 3. All the ingredients should be obtainable either through your local chemist or, if not, they are available from Messrs. Philip Harris Biological, Oldmixon, Weston-super-Mare, Avon BS24 9BJ. It may well prove that the proprietary vitamin supplement for small animals sold under the trade name "Vionate" and added at the rate of 0.5 or even 1 gram per batch is equally suitable as a substitute for the vitamins given in Table 3. I have used it with success on other species, but not carried out a definitive investigation as to its equal efficacy with the painted ladies.

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| | |
|---|---|
| Water | 600 ml |
| Agar | 27 g |
| | |
| Water | 330 ml |
| Casein (light, white) | 40 g |
| Wheat germ (Bemax) | 40 g |
| Sugar (white, domestic) | 40 g |
| Cellulose powder (Whatman CF11) | 6 g |
| Nettle powder | 12 g |
| Wessons salts (salt mixture 'W') | 10 g |
| Inositol | 1 g |
| Cholesterol | 1 g |
| Potassium hydroxide 20% | 5 ml |
| Choline chloride 10% | 10 ml |
| Methyl-4-hydroxy benzoate (15% in alcohol) | 10 ml |
| Linseed oil | 3 ml |
| Formaldehyde 10% | 5 ml |
| Vitamin solution | 2 ml |
| Vitamin C (ascorbic acid) | 5 g |
| Veterinary Aureomycin | 3 g |

Table 2: Ingredients to make 1.1 litres of semi synthetic diet for painted lady larvae.

| | |
|---|---|
| Nicotinic acid | 5.00 g |
| (+)-Pantothenic acid calcium salt. | 5.00 g |
| Riboflavin (B2) | 2.50 g |
| Aneurine hydrochloride (B1) | 1.25 g |
| Pyridoxine hydrochloride (B6) | 1.25 g |
| Folic acid | 1.25 g |
| D-Biotin | 0.10 g |
| Cyanocobalamin (B12) | 0.01 g |
| Mix well, weigh 2.0 g. of the mixture, and add to : | |
| Water | 50.00 ml |
| Alcohol (95% or absolute) | 50.00 ml |

Table 3: Composition of the vitamin mixture used in the semi synthetic diet. When made up, keeps indefinitely under refrigeration. Nomenclature according to, and ingredients available from, British Drug Houses (BDH Ltd.).

The diet is made up as follows:–

The agar is added to the first aliquot of cold water, brought to the boil and kept simmering for about ten minutes. Since it is very liable to burning, the boiling is best done using a double (porridge) saucepan. Failing that stand with it stirring slowly and continuously with a wooden spatula type kitchen spoon. It should now be put aside and allowed to cool to about 70-75° C. While cooling the potassium hydroxide is added to the other portion of water followed by most of the solid ingredients (except the vitamin C and antibiotic which are destroyed by over-heating) which are mixed in using a Kenwood chef, Moulinex or other similar kitchen blender. It matters not whether they be added one by one or all together, but there is something to be said for mixing in the casein first and then adding all the other solids together. For those whose wives may not possess such an implement, although it is much harder work, the diet can be mixed entirely by hand using an egg-beater or even a whisk. I have used both methods on several occasions in order to satisfy myself that the resulting diet is just as acceptable as the machine mixed version and while one has to be more careful in order to avoid lumps, it is. The reason for the potassium hydroxide is that it reacts with the casein (which is rather insoluble) to form potassium caseinate, a more soluble substance and it will be observed as the mixing progresses that it gradually thickens.

When all the solids have been mixed in, the liquid ingredients are now blended in and for measuring these a pipette, hypodermic syringe or small measuring cylinder may be used. Next the cooled down but still hot agar is added. Now for the quantities given the average kitchen blender may be too small, so add half the agar and then pour back the contents of the blender into the agar saucepan and mix in there using a wooden spoon or spatula. Finally pour half back into the blender and add the vitamin C and antibiotic. Again pour back into the saucepan and finish off the mixing with the wooden spoon. The diet is now poured into a suitably sized container and allowed to set.

For use the diet is going to be required as strips and as cubes of about 1½ cms. Since one is unlikely to require the entire batch made up immediately and since it does not do frozen diet any good at all to be frequently thawed out in order just to cut off and use a portion, once set the diet should be cut up into suitable slices which are separately wrapped in aluminium foil or polythene bags before being placed under refrigeration or deepfrozen.

The storage life of the diet in use at room temperatures is about a week or ten days. At refrigerator temperatures of 4°C it keeps for 3 weeks and in a deepfreeze at -25°C from 6-12 months. Although in theory storage should be almost indefinite, in practice it was found that the water gradually elutes out of the diet and forms ice

crystals on its surface. This happens even when it is tightly contained. Diet from the deepfreeze should be allowed to thaw out overnight at room temperature (or even in the refrigerator). It should never be thawed by running hot water over it or otherwise heating. When rearing larvae on diet, therefore, thought needs to be given to the following days requirements.

## Rearing on the diet

As was found when rearing on plants, so too with the diet, mortality was high when the larvae were kept in the least degree crowded, but minimal when not more tha 10 or 12 early instars were kept together and then, from the third instar onwards, placed individually (or sometimes in pairs). Two methods of presentation were finally adopted, the first being used for the early instars and the second for the larger larvae. In the first a strip of diet about 1 cm wide was laid across the centre of a 9 cm diameter petri dish. The top of strip was then trimmed level with a knife so that the lid of the dish was also in contact with the diet. This effectively divided the dish into two and ten or a dozen larvae were then placed on each side of it and the lid was held in place with a rubber band. The larvae were either transferred on hatching, from the nettle leaves used to gather them up from the buddleia and burdock flower heads, or the nettle leaves bearing eggs about to hatch were placed in the dish and the larvae allowed to transfer themselves. This last was much the quickest method. It was found to be not only difficult but very time-consuming and tedious to transfer newly hatched larvae and the discovery that after feeding on nettle they would transfer onto the diet was a great benefit.

The larvae would feed in the petri dishes until they reached the third instar. At this stage the diet became stale, sometimes also mouldy and the larvae in danger of being overcrowded. The second method of presentation was now used. The larva were transferred individually (or sometimes in pairs) into 40 ml clear plastic wide-mouthed vials. The clear, snap-on lids of these were pierced half-a-dozen times with a small awl to give ventilation. A 1½ cm cube of diet was found to last the larva until pupation which took place on the lid of the vial. It was found that while a pair of larvae in each pot could be reared, it needed a double size cube of diet and there also tended to be some disturbance at pupation time.

Initally it was tried putting newly hatched larvae direct into these vials, but, even when several larvae were put into each, it was found that they wandered off the diet and a high mortality resulted. It was fairly obvious that the diet was not an immediate attraction to the larvae, as is nettle, and it is not until the pangs of hunger overcome their desire to search for something better, that they take

to eating it. This applied also to those transferring to the diet after eating plant food. The success in the petri dishes was due to the fact that the diet occupied one entire side of their confined space, floor to ceiling, and consequently their wandering was regularly bringing them into contact with diet, whereas in the vials, once they had left the diet and got up to the lid, it was not easy for them to find their way back down to the cube of diet placed centrally in the base of the vial.

At first the eggbearing florets of burdock and buddleia were placed into 1 lb jars, into the bottom of which a 1 cm layer of diet had been poured. Although quite a few of the larvae transferred in this way after hatching onto the diet, they were not happy in this type of container, were also overcrowded and it proved very time-consuming to move them out of the jars onto fresh diet. Also, already mentioned above, serious problems with mould arose. The eventual solution was to place the eggbearing florets into a plastic box and add fresh nettle leaves as the larvae started to hatch. These leaves were then placed into the petri dishes with the diet after the larvae had transferred onto them. Sometimes, for convenience, or because there was not enough diet made up, they were continued to be fed on nettle until 2nd or even 3rd instar. At this stage the larvae are much easier to handle and could be transferred directly into pots containing a cube of diet.

## The time and cost of using diet

I have always held that 80% of the cost of maintaining any culture is in keeping the mother stock in being and arises whether or not any insects are being used for any other purpose whatever. It is only if the surplus out-put increases by a factor of five or more that any significant further costs are likely to be incurred. Leaving aside the normal overheads of premises, heating, lighting it is interesting to try and compare the cost of using diet over conventional food-plant. This is no easy sum as a lot will depend on circumstances such as how many other species are also being reared, whether normal foodplant is nearby or has to be fetched from a distance or even bought in.

The actual cost of the diet as described above, taking the prices from the latest catalogues and from a local chemist, works out at £2.20 per litre of diet of which sum half is in the cost of the agar, giving good reason to try experimenting with diet formulae and substituting substances such as gelatine or sodium alginate for the agar, both of which are very much cheaper. It is possible to reduce the quantity of agar and other species have been so reared on diets using the two above mentioned gelling agents or with only half the quantity of agar, but there are difficulties and problems.

Now one litre of diet will support 100 larvae which, if you allow for a few larvae not producing viable pupae, works out at 2½p per butterfly. Compare this with what pupae normally cost to buy. However, also to be added to the cost of production is the sum expended on the plastic containers being used. This can vary form nil, when used yogurt cups etc. can be obtained and pressed into use up to the £35 per thousand for high quality plastic containers. Once obtained however, these can be washed, sterilized and re-used. So the total container cost will depend on how many are needed and how often they are going to be re-used. Against any cost for containers must be offset the saved cost of needing to buy, or perhaps make, conventional type larval cages. In view of the need to keep painted lady larvae at low densities the number of cages required, and hence cost, could be considerable.

Space is also saved by the use of diet. The plastic vials are stacked in plastic seed trays and take up no more room than would a small library of books. Making no smell, or mess, they can also be kept in situations where normal cages would be unacceptable. Indeed a room of 1600 cubic foot can support an output of several thousand per week all the year round. This needs to be compared with perhaps half an acre of greenhouse which is required to produce sufficient natural foodplant throughout the year for a much lower number of butterflies.

The cost of obtaining natural foodplant will depend on circumstances. If on the spot then there is no cost, but if it has to be fetched from some distance then there is the cost of fetching it, both in mileage and time. Unlike natural food also, diet can be guaranteed to be free of accidental contamination by pesticides, a very real hazard for the entomologist today. Most significantly, perhaps, it enables all the year round rearing to be undertaken at a constant cost, whereas to obtain some natural foodplants in winter is both difficult and can involve the very considerable cost of having to heat a glasshouse, or having the food specially flown in from abroad.

The other 'cost' factor to be taken into account is ones's time and the answer here is that the greater the number of larvae being reared then the greater is the saving in time over conventional rearing techniques, but for small numbers, dozens certainly, a couple of hundred probably, then diet may well consume more time. The time taken to make a batch of diet is fairly constant, about half an hour, and is independant of the quantity provided a large mixer is available, 20 l taking no longer than a 1 l batch. Even if only a small mixer is available, then, if done in succession, 4 or 5 one litre batches should take little more than the hour. Once made the diet is storable, so enough to last several weeks can be made up in a single session. Compare this with the time it takes to gather nettle leaves every few days and if a journey also has to be made for them then this

time can be several hours per week. Another aspect insofar as nettle (or thistle) feeding larvae are concerned, is the sheer unpleasantness of gathering such foliage, particularly in wet weather.

The greatest saving in time, however, is in the looking after of the later instars. While it is true that the setting up of individual vials and transferring the larvae into them is more time-consuming than putting nettle leaf into plastic boxes or cages, these larvae on natural food will continue to need feeding every 2 or 3 days, whereas once in their vials those on diet will not. It is in this later stage that the greater the numbers the greater the saving in time. In addition to the time saved another great advantage is that no attention is going to be required over weekends and holidays.

## Discussion

It has been shown that the painted lady butterfly can be readily reared on a semisynthetic diet, albeit that the diet must contain an element of one of the known natural foodplants and the one used, since it is a readily available commercial product, was stinging nettle. It was also shown that low densities in the smaller instars and isolation for the larger larvae gave the maximum survival. This is perhaps not too surprising a result.

The failure to rear on often quoted foodplants, thistles, is, however, both surprising and of considerable import, for it raises some interesting points. It is impossible to believe that all the books are wrong, but two recent papers bear considerable import on this point and also provide a valid explanation not in conflict with the literature.

In the first paper, by Mikheev & Kreslavsky (1980), it has been shown that in the beetle *Lochmaea caprea* there are two distinct races which feed on willow and birch respectively. That on birch is capable of surviving on either foodplant but the willow race can only survive on willow. In nature there is rarely interbreeding and when it does occur the birch addicted race inherits as a dominant allele capable of survival on either foodplant. In *Yponomeuta padellus* too it is known that there are sympatric races preferring separate foodplants. (Emmet, nd., Menken, 1981). Here then we have the mechanism to explain my failure to rear painted ladies on thistle. By chance I had a 'race' fixated on other foodplants and therefore of a genetic makeup which was unable to survive on thistle. I feel this is a valid theory which fits the present facts, although there is as yet no positive proof.

In the second paper, published since the end of this investigation, Warren (1986) observing the painted lady under field conditions discovered that of over 200 larvae found on thistle only

one was on spear thistle (*C. vulgare*) and none at all on creeping thistle (*C. arvense*) although both these species were in abundance. The larvae in fact were on musk thistle (*C. nutans*) a species I did not try and which is not so often quoted in the literature as are the others. It is, I feel, highly significant that although so plentiful, less than half a percent of the other thistle species (a single example only in fact) had a larva on it. What we do not know of course is how many ova were deposited on these other thistles from which the larvae failed to survive and there is clearly scope for considerably more observations to be made on the oviposition choices and survival rate of painted lady larvae on various foodplants.

For the laying of ova on clearly lethal plants as buddleia and *Lavatera* I have no explanation. It could be a facet of cage confinement or there may even be 'races' of the painted lady that can survive on these plants. The laying on *Lavatera* is more understandable than on buddleia, for it is related to a suitable foodplant, *Malva*, and almost certainly contains the same chemical laying cue.

For some as yet unexplained reason, the larvae of butterflies (Papilionoidea) require their diet to contain an element of the natural foodplant (or its flavouring essence), whereas most other Lepidoptera do not and their larvae will happily take to a neutral flavour and often more simply compounded diet. In this aspect the painted lady is no exception, required the addition of dried nettle to the diet and failed on the neutral diet tried.

The successful proof that the painted lady can be reared on diet means that it is now possible for them to be reared on a very large scale all the year round without the use of large and expensive glasshouses and their comparatively short life-cycle makes them an ideal insect for teaching and research. It is possible that a limiting factor may be in keeping the adults fertile through the winter months, but while I lost these during the snows of February, I remain convinced that given the right facilities this problem can be overcome. It also seems highly probable that other nettle feeding species will be equally easy to rear on the same diet.

The most surprising aspect discovered was the facility with which larvae already feeding on nettle would swich to diet. This is known not to occur with quite a few other species, such as *P. brassicae* and *Manduca sexta* and was a bonus which simplifies the rearing procedure. I cannot offer any expanation for this and it is interesting to speculate if it might occur in other Nymphalidae.

## References

Allan, P. B. M. (1949) *Larval Foodplants*. Watkins & Doncaster, London.

Batra, S. W. T., Coulson, J. R., Dunn, P. H. & Boldt, P. E. (1981)

Insects and Fungi Associated with *Carduus* Thistles (Compositae). *USDA Technical Bulletin No. 1616.* Washington.

Cribb, P. W. (nd [1983]) *Breeding the British Butterflies. Amat. Ent.* **18**. Amateur Entomologist's Society.

David, W. A. L. & Gardiner, B. O. C. (1966) The effect of Sinigrin on the feeding of *Pieris brassicae* L. larvae transferred from various diets. *Ent. exp. et appl.* **9**:954-98.

Emmet, A. M. (nd) *A field guide to the smaller British Lepidoptera.* British Entomological & Natural history Society.

Frowhawk, F. W. (1934) *The Complete Book of British Butterflies.* Ward, Lock, London.

Gardiner, B. O. C. (1978) The preparation and use of artificial diets for the rearing of insects. *Entomologist's Rec. J. Var.* **90**: 181-184; 267-270; 287-292.

Gardiner, B. O. C. (1985) *Pieris brassicae* pp 453-458. In *Handbook of Insect Rearing Vol II* [Eds. Pritam Singh & R. F. Moore]. Elsevier, Amsterdam.

Harris, M. (1775) *The English Lepidoptera: or, the Aurelian's Pocket Companion:* J. Robson, London.

Heath, J., Pollard, E. & Thomas, J. A. (1984) *Atlas of Butterflies in Great Britain and Ireland*. Viking.

Holland, W. J. (1916) *The Butterfly Book.* Doubleday, Page & Co., New York.

Howarth, T. W. (1973) *South's British Butterflies.* F. Warne, London.

Humphreys, H. N. & Westood, J. O. (1841) *British Butterflies and their Transformations.* William Smith, London.

Menken, S. B. J. (1981) Host races and sympatric speciation in small ermine moths (*Yponomeuta padellus*, Yponomeutidae). *Ent. exp. et. appl.* **30**: 280-292.

Mikheev, A. V. & Kreslavsky, A. G. (1980) Interrelations of the willow and birch races of *Lochmaea caprea* L. (Coleoptera, Chrysomelidae) with foodplants. *Zoologicheskii zhurnal* **59**: 705-714.

Rennie, J. (1832) *A Conspectus of the Butterflies and Moths found in Britain.* W. Orr. London.

Samouelle, G. (1819) *The Entomologist's useful Compendium.* Thomas Boys, London.

Stainton, H. T. (1857) *A Manual of British Butterflies and Moths.* Vol I. J. van Voorst, London.

Scorer, A. G. (1913) *The Entomologist's Logbook.* Routledge & Sons, London.

Stokoe, W. J. (1944) *The Caterpillars of the British Butterflies.* F. Warne & Co. London.

South, R. (1936) *The Butterflies of the British Isles.* F. Warne & Co., London.

Rowland-Brown, H. (1907) The foodplants of *Pyrameis cardui*. *Entomologist* **40**: 292-293.

Warren, M. S. (1986) Notes on habitat selection and the larval host-plant of the brown argus, *Aricia agestis* (D. & S.), marsh fritillary, *Eurodryas aurinia* (Rottemburg), and painted lady, *Vanessa cardui* (L.), in 1985. *Entomologist's Gaz.* **37**: 65-67.

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THE TRUE DATE OF PUBLICATION OF F. W. FROHAWK'S NATURAL HISTORY OF BRITISH BUTTERFLIES. — I was sorry to see the date of this work again incorrectly given as 1914 in Colin Pratt's recent history of the comma butterfly in this journal. I have seen this incorrect date quoted before; it seems to be a commonly held view and I believe it has arisen due to persistent misquotes in bookdealers catalogues. The true date of publication is 1924 and I am of the firm opinion that this needs to be put on record in print in order to avoid future errors. As an example, a ten-year misquote in the revised Kloet and Hincks (1854 for 1845) led to a mistaken change in nomenclature, now reversed (Emmet *Entomologist's Gaz.* **38**: 66).

A study of the contents of the two volumes of *The Natural History of British Butterflies* reveal the life-history of the large blue butterfly, which, and I believe this is a well-known fact, was not discovered until 1915. Data for specimens on some of the plates are given as 1919 and the 1920's. This alone makes a nonsense of a publication date of 1914. In the *Entomologist* for February 1923 we have a note about the work from which I quote:– "But if the two volumes, when published . . . . " "The size of the work will be. . ." Two years later we are given a full review (*Entomologist* **63**: 43-45) where the date of publication is unequivocally stated as 1924, and with 60 coloured and 5 plain plates. Curiously, the half page advert for the book in the same issue only mentions 4 plain plates. In dealers catalogues I have seen this number to vary and even seen 1925 (as well as 1914) given as the publication date. – BRIAN O. C. GARDINER, 18 Chesterton Hall Crescent, Cambridge, CB2 1AP.

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ALOEIDES PALLIDA JONATHANI PRINGLE: DESIGNATION OF ALLOTYPE — in the original description of this subspecies (*Ent. Rec.* **99**: 4-6), the designation of the allotype was omitted, and should be as follows:

ALLOTYPE : Kammanassie Mountain 24/12/1978 (Dr. J. B. Ball).

# MYRMECOPHILY IN LYCAENID BUTTERFLIES (LEPIDOPTERA : LYCAENIDAE)

By STEPHEN F. HENNING*

The family Lycaenidae comprises more than a third of the total number of species of butterflies in Africa, and several new species are still being discovered every year. They are small to medium-sized butterflies and are noted for their brilliant metallic blue, red or orange coloration. However they are most famous for the association of their larvae with ants.

A remarkable number of animal species exploit the colonies of social insects in one way or another. Most do so only occasionally, functioning as casual predators or temporary nest commensals. But a great many others are dependent on social insects during part or all of their life cycles. The larvae of many lycaenids have a variety of associations with ants and are referred to as myrmecophiles. The larvae of the Lycaenidae are usually onisciform, (widest and highest in the middle, with dorsal surface gently convex, like a woodlouse), with head largely hidden beneath the prothorax. The cuticle is relatively much thicker than in other lepidopterous larvae.

Most lycaenid larvae have a median dorsal organ (honey-gland) on the seventh abdominal segment and a pair of dorsolateral eversible organs (tubercles) on either side of the eighth segment. Either or both these organs may be lacking. In addition most lycaenid larvae have small epidermal glands concentrated in certain areas that appear to produce a volatile chemical substance that attracts ants.

The honey-gland consists of a shallow, usually transverse, slit or depression near the posterior margin of the segment into which several glands discharge. The depression fills with secretion and can be partly everted by blood pressure resulting in the appearance of a droplet of fluid which is immediately consumed if ants are in attendance. Setae bordering the depression help to retain the droplet if ants are not there to take it immediately. Larvae of some species such as *Poecilmitis lycegenes* (Trimen), are dependent upon ants to remove the liquid and, in the absence of ants, the larvae become mouldy and die if the fluid is not removed artificially. On the other hand, some species that possess a honey-gland are not known to be attended by ants.

Maschwitz *et al.* (1975) analysed secretions of the honey-gland of *Lysandra hispana* H.-S. to determine the possible food content. They found that in addition to water, the main constituents of the secretion were fructose, sucrose, trehalose and glucose – the total concentration of these sugars being more than 10% (13.1% and 18.7%). The haemolymph of the caterpillars, however, had a total

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carbohydrate content of only about 2% indicating that the honey-gland concentrates the sugars in the secretions to make it more attractive as a food for the ants. Other than minor quantities of protein, only one amino acid could be detected in the secretion. They found that large larvae of *L. hispana* were able to release the secretion in intervals of less than two minutes for at least one hour. The larvae of *L. hispana* were visited regularly in the field by ants which lay trails to the caterpillars and recruit new members from their colony.

The paired tubercles of the eighth abdominal segment are each frequently set in the tip of a cylinder into which they are retracted. In this condition their position is indicated externally by a small, round, often whitish, depression, generally bordered by setae. When everted by blood pressure they are seen to carry on their surface a rosette of slender, sometimes brightly coloured spiculate setae, each associated with a gland cell. The tubercles may be individually or simultaneously everted and retracted with great speed and the setae whirled or vibrated. The tubercles generally first appear in the second instar, although in some species they may appear either earlier or later.

The function of the tubercles is still in doubt. Several authors suggested that they have an odoriferous function which might signal the presence of a honeydew-producing caterpillar to ants. It has been observed though that if ants are too persistant in their efforts to obtain secretions from the honey-gland they will be deterred by the action of the tubercles when these come into play. Clark and Dickson (1956) suggested that the tubercles could perhaps be used in the same way to prevent small insects other than ants from interfering with the honey-gland. Claassens and Dickson (1977) have made the most recent observations of importance, with respect to the tubercles of *Aloeides thyra* (L.). Although the larvae of this species are phytophagous they do, at least in the fourth to the sixth instars, remain in ants' nests under stones during the day, but come out at night to feed on their foodplants. They possess the highly evolved type of tubercle with long setae, but do not possess any honey-gland of the usual form. When studying these larvae in artificial ants' nests Claassens and Dickson noticed an excited reaction by the ants whenever the tubercles of a larva were extended, temporarily increasing the activity around the larva. The attraction is mutual since these larvae will follow the trail of the ants leading from a nest to the foodplants when they emerge from the nests at night to feed. The larvae ensure the company of the ants as they travel by rapidly and repeatedly extending and retracting their tubercles. They suggest that the tubercles produce a volatile chemical of brief effectiveness which causes the ants to act in this manner.

Henning (1980, 1983a, b) observed similar behaviour with the

closely related *Aloeides dentatis* (Swierstra). He found that the glands on the tubercles of *A. dentatis* produced a volatile chemical substance that appeared to mimic the alerting and attracting components of its host ants' alarm pheromone but not the biting markers. When the *A. dentatis* larvae extruded their tubercles and released the volatile chemical the ants within a range of 2-4cm became alerted. The ants' rate of locomotion increased; they made short fast runs with frequent changes of direction with mandibles held open and increased antennal movement. The ants within a 2cm range were also alerted but were attracted directly towards the lycaenid larvae. The ants then accompanied the *A. dentatis* larvae out of the nest to the foodplants. The alerting component of the pheromone diffuses more rapidly than the attracting component, thus accounting for the fact that the ants far from the *A. dentatis* were only alerted while the ants close to the larvae were both alerted and attracted towards them.

Hinton (1951) was the first to suggest that the epidermal glands secreted an ant attractant substance. Malicky (1969, 1970) also noticed that ants tend to palpate with their antennae certain areas of the lycaenid larvae more intensively than others. He found that these areas contain small epidermal glands that are rare or absent elsewhere. He called these glands perforated cupolas. He believed that they produce a volatile substance which releases the ants palpation although he did not know the nature of the chemical.

Henning (1980, 1983b) carried out experiments to determine whether the association between ants and lycaenid larvae is mediated by chemical signals. He observed the ants' reactions to extracts of the lycaenid's glands impregnated onto inert material. The volatile secretions of the lycaenid's glands and those of the ants were also compared using gas chromatography. It was found that in the two myrmecophilous species studied, *A. dentatis* and *Lepidochrysops ignota* (Trimen), the epidermal glands (perforated cupolas) produced a chemical secretion which is very similar to, and appeared to mimic, the brood pheromone of their host ants. In *A. dentatis* it was also found that a second secretion produced by glands on the tubercles appeared to mimic components of the alarm pheromones of the host ant (see above).

So it appears that most lycaenid larvae have small epidermal glands concentrated in certain areas that possibly produce a volatile chemical substance that attracts ants. Some larvae also have a large dorsal honey-gland on the seventh segment which produces a substance that has been compared to the honey-dew excreted by aphids. This substance is imbibed by the ants. On the eighth abdominal segment there is often a pair of dorsolateral eversible organs (tubercles) whose possible function has caused some controversy. These may be used in some species to keep the honey-gland from being

over exploited, while in other species there can be a communicatory function.

The cuticle of lycaenid larvae is many times thicker than that of other lepidopterous larvae, which confers valuable protection against attack by ants. Furthermore, most lycaenid larvae, unlike the majority of other lepidopterous larvae, do not perform jerky lateral movements when physically disturbed. Since fast motions of this sort are very effective in releasing aggressive behaviour in ants, their absence in lycaenid larvae may be a further adaptation to their association with ants. Wilson (1971) observed that ants have excellent form vision and are especially keen at detecting moving objects. He found that workers do not respond to prey insects standing still, but ran toward them as soon as they began to move.

Larsen & Pittaway (1982) found that larvae of *Apharitis acamas* (Klug) appear to pick up the nest odour of their own particular colony of host ants which makes them unacceptable to other colonies of host ants. When they released a larva from one colony of host ants into another colony of host ants it was immediately attacked and killed by the workers.

Schroth & Maschwitz (1984) did studies on *Maculinea teleius* Bergsträsser to find out how the fourth instar larvae find their way into the nest of their host ant *Myrmica laevinodis* Nylander. They did trail-following experiments with artificially laid trails of *M. laevinodis* and demonstrated that the fourth instar larvae of *M. teleius* actively find the host nest, using the pheromone trails of the workers. They produced these artificial trails by making watery suspensions of crushed gasters of *Myrmica* workers.

Once the lycaenid larvae have been carried, or have made their way into the host nest, they become fully integrated into the colony. The lycaenid larvae are groomed and generally treated as the ants do their own brood.

Claassens (1976) observed an extraordinary behaviour pattern in which *Lepidochrysops* larvae appeared to 'lick' the host ants' legs, head and abdomen. The ants responded to this tactile stimulus by remaining motionless, or in some cases lying on their sides. Claassens examined these ants but could find nothing unusual about them which could have induced this behaviour in the larvae. This is probably a type of grooming behaviour which has also been observed in other myrmecophiles, for example, Staphylinidae and Historidae (Coleoptera). Claassens also noted that when brood was scarce in the nest *Lepidochrysops* larvae would attempt to solicit regurgitated food (trophallaxis) from the ants. The larva would lift its head from the floor of the nest so that its mouth was exposed and would approach an ant attempting to touch its mandibles with its own. Claassens says that the larvae of the host ants, *Camponotus maculatus* F., showed similar behaviour which sometimes

seemed to result in trophallaxis. Feeding of lycaenid larvae by ants has been observed in several non-South African species, including *Maculinea alcon* F. from Europe.

Ants also show considerable 'interest' in lycaenid pupae. This may also be due to the production of pheromones as the small epidermal glandular organs which produce the chemical in the larvae are also present in the pupae. The pupae of the *Lepidochrysops* have extraordinarily shaped setae, the ends of which usually appear to be covered with a shiny dried substance. The setae are hollow and the ants obtain a fluid from them which they appear to find extremely attractive. The ants also continue to visit empty pupal cases after the emergence of the imagos. Before emergence the host ants show an increased interest in the pupae. Claassens (1976) observed that they turn suddenly towards such pupae as if they had received some cue. Once an imago succeeded in breaking the pupal case during emergence, the ants were seen to seize a free edge and pull on it, apparently attempting to tear it apart so as to free the adult. This behaviour by the ants is very similar to that shown by them to emerging ant cocoons. Claassens suggest that the attractive pupal remains act as a 'decoy' allowing the emerging adult lycaenids to escape from the ants nest without being attacked or eaten, but this has not been adequately demonstrated.

The body and appendages of the newly emerged adult lycaenid are covered by a temporary coating of easily detachable scales. These scales function to prevent the ants from developing an effective attack on the delicate adult as it makes its way out of the nest. The scales are detached and adhere to any part of the ant that comes into contact with them. Scales stick to the antennae, mouth-parts and legs of the ants, which then retreat and become so fully occupied cleaning themselves that the newly emerged adult is able to escape. When the adult has made its way out of the nest, it expands its wings, and a stroke or two suffices to detach any of the temporary scales that may still remain.

Three good examples of lycaenid species which virtually cover the whole range of myrmecophilous behaviour are *Aloeides dentatis* (Swierstra), *Lepidochrysops ignota* (Trimen) and *Poecilmitis lycegenes* (Trimen).

*Aloeides dentatis* is a small butterfly, orange in colour on the upperside and red marked with black and silver on the under. The flight is short and rapid, always near the ground except when the insect is chasing others about. When disturbed it rises up from its resting spot on the ground, swiftly zigzags a few metres, and alights on the ground again. It often sits so close as almost to be trodden on by passers by.

The female oviposits two eggs in quick succession on the under surface of a leaf of the foodplant *Hermania depressa* N.E.Br. (Sterculiaceae) after she has detected the presence of the correct ant *Acantholepis capensis* Mayr. The females settle on the ground in an area and investigate the *H. depressa* plants with their antennae. They can walk for a considerable distance passing their antennae over the ground and the plants. One female was watched for 45 minutes during which time she did not take to the wing once. She walked about 3 metres and investigated numerous plants, but did not lay a single egg. After 45 minutes she came to a *H. depressa* plant near an *A. capensis* nest which was frequented by the ants. The *A. dentatis* female investigated the plant and surrounding area by slowly passing her antennae over the surface. She then climbed onto the leaves of the plant, all the time passing her antennae over the surface. She then curved her abdomen over the edge of the leaf and laid two eggs in quick succession next to each other on the under surface and then flew off. All the females observed displayed a similar behaviour pattern to the one described above. There was no actual interaction between the female and the ants and in some instances there were no worker ants present on the plant at the time of ovipositing. In these instances ants were observed on the plants before the *A. dentatis* investigated it and oviposited. It appears that something deposited by the ants may cause them to lay. This substance may well be the ants' trail pheromone.

To test the hypothesis that ants were necessary for egg laying to occur, 20 females were captured. Ten females were placed in a container with the foodplant alone, and ten with the foodplant plus ants. The result was that all ten of the females housed with *H. depressa* and the ants laid at least two eggs, while none of those placed with the foodplant alone laid even a single egg. Three of the females outlived the ants placed with them, but continued to lay even though the ants were no longer present.

The eggs take from 13-22 days to hatch. All the larval instars are rather similar in appearance. The retractile tubercles are white and are clearly visible, even to the naked eye. The honey-gland on the seventh segment is absent in this species.

The first and second instars eat only the surface of the leaf, leaving patches or short furrows. The third instar starts to feed on the margins of the leaves. During this period the larvae are attended by the ant *A. capensis*. The first two instars do not appear to leave the foodplant as they are small enough to be concealed amongst the leaves. The third instar larvae are usually absent from the foodplants during the day as they shelter with the ant brood inside the nest.

The third to sixth larval instars shelter during the day in the nest of the ant *A. capensis*. The larvae tend to congregate together in

the nest often with the brood of the ants. The largest number of larvae found in a single nest was four. The *A. dentatis* larvae usually remained motionless in the nest while the ants constantly attended them, either stroking them slowly with their antennae or just standing on or near them. The droppings of the larvae were removed by the ants to the 'refuse pile'.

The *A. dentatis* larvae usually left the nest between 1900 and 2100 hours to feed. Often the larvae would leave the nest together, following one behind the other. They appear to follow the odour trails laid by the ants in their foraging. Once the *A. dentatis* larvae started moving they repeatedly extruded their tubercles, usually both at the same time. This alerted the attendant ants. They would make short fast runs with frequent changes of direction around and over the larvae, with mandibles held open and with increased antennal movement. The focus of attention was the tubercles. Several workers usually ran up to the tubercles and if the long crowning setae were touched by the ants' antennae, they were retracted immediately.

As the *A. dentatis* larvae made their way along the odour trails towards the foodplant the tubercles were extruded at intervals keeping the ants in attendance at a high level of alertness.

During the actual feeding, when the larvae were stationary, the tubercles were not repeatedly extended and the ants in contact with them were not as alert as when they were moving. The number of ants remained relatively constant around the larvae as they fed. The activity of the ants on or close to the larvae was greater when the larvae were feeding than when they were at rest in the nest because of the occasional extrusion of the tubercles. There were usually from 3-10 ants present around each larva.

After feeding, the larvae returned to the nest by following the same pheromone trail back. This may be ½ to 2 hours after first leaving the nest. The ants were again kept at a high level of alertness by the extrusion of the tubercles.

The larvae appear to remain in the ants' nest over the winter months when their foodplant is not available. Fifth and sixth instar larvae found in an *A. capensis* nest in July were in a dormant state and remained so for a considerable time. The sixth (final instar) larva finally pupated in October without further feeding. The fifth instar commenced feeding at this time and finally moulted into the final instar in February of the following year. The actual duration of this instar could not be recorded, but 196 days had elapsed between the date of its discovery to the time it finally moulted. The duration of the sixth instar during the summer months is some 42 days, but is obviously much longer during the winter months when diapause takes place.

The pupae are found in the ants' nest attached by their cremastral hooks on the floor of the tunnels. The pupae found so far have always been in side tunnels, away from the main brood chamber. This stage lasts some twenty days.

(*to be concluded*)

# Notes and Observations

UNUSUAL EGGLAYING IN THE PEACOCK BUTTERFLY – In an interesting article, (*Ent Rec.* **98**: 9-10), A. S. Pullin draws attention to the occasional habit of female small tortoishell butterflies of depositing their eggs on top of previously laid batches. In May 1986, I caged three female peacocks in a alarge bucket cage containing fresh, bushy young nettles. After one week, a typical large egg batch was laid. Within 24 hours, a fresh batch had been deposited on the basal aspect of the first batch. The second batch was normal in all respects, save its proximity to the first batch. I have never observed this behaviour before, either in the peacock or small tortoishell butterflies. W. E. RIMINGTON, 8 Riverside Drive, Sprotborough, Doncaster.

SOME LATE SIGHTINGS OF BUTTERFLIES AND OTHER INSECTS IN AND AROUND HAMPSHIRE DURING THE MILD AUTUMN OF 1986. – Although there were some cold nights during the first half of September, the autumn was generally most mild and it was not until the end of the first week of December that the first effective frost occurred in Hampshire; moreover, day temperatures remained unusually high and something approximating to a drought prevailed until the autumn rains arrived, in earnest, on 20th October. As a consequence, many insects lingered deep into the autumn and a greatly extended season resulted.

In terms of butterflies it appears that we had the most drawn out season since the remarkable 1975, when *Lasiommata megera, Pararge aegeria* and *Pieris rapae* lasted into November. In central southern England it is unusual for *Pyronia tithonus* to be seen after the first few days of September. For many years my own latest sighting was of a lone female on 11th September (1971); this 'record' was superseded on 13th September 1985 and I then considered my 1986 sighting of a very worn female on 18th September to constitute a personal nonpariel, and took pride in the fact that the butterfly was seen in my garden. Pride comes before a fall, for one was seen no later than 3rd October at Hambledon Hill, Dorset!

*Hipparchia semele* was seen on the Chalk near Wallingford, Berks, on 4th October and on the 8th on a dry heath near Farnborough, Hants. Although I have, in years long gone, seen this

species in fair numbers during early October at Tentsmuir Point, Fife, it is most unusual for it to be seen in the deep south after, say, 20th September. Apart from in poor autumns, such as that of 1983, *Maniola jurtina* tends to last just into October on chalk grassland in Hampshire; whether this is due to a protracted emergence or a partial second generation I know not. In 1986 the last specimen, predictably female, was seen at Selborne on 26th October. *Coenonympha pamphilus* often straddles into early October here: I saw my last of the year on the 16th but the Warden of Old Winchester Hill NNR recorded one on 2nd November, surely an excessively late date for this species? Normally, in east Hampshire the last *Pararge aegeria* of the year is noted during mid October and it is rare to see the species after, say, the 15th. In 1986 I saw my first November specimens for 11 years, the last being seen on the 6th. In 1975 one was seen near Alton on Armistice Day.

Second generation specimens of *Cupido minimus* were seen as late as 20th September near West Meon and other Lycaenid butterflies were prominent on the Chalk during the mild weather of the first half of October. *Polyommatus icarus, Lysandra bellargus* and *L. coridon* were on the wing well into the month, the latter being seen as late as 17th October near Winchester. The third generation of *Lycaena phlaeas* was decidedly scarce in Hampshire and no genuinely late sightings have been reported. However, I did see a very worn *Thecla betulae* near Selborne on 16th October: I have monitored this isolated colony closely since 1975 and had previously not seen the adult later than 7th October and consequently regard this 1986 sighting as being of some significance. *Hesperia comma* occurs at three or four sites in the Meon valley region of Hampshire, where its flight season seemingly takes place later than elsewhere in central southern England, peak season normally occurring during the first few days of September. I was rather amazed to find it well out on 21st September but am reliably informed that it lasted well into October, the final record coming from the 11th. Gradually one becomes immune to surprise. Perhaps my sighting of a single specimen of the moth *Autographa gamma* on 15th November would not have been too noteworthy had it taken place in Cornwall or on the Isle of Wight. It is the latest record I have for it in this part of the country by a long way.

Dragonflies also enjoyed an extended season. *Aeshna cyanea* has the reputation for being the last species to be seen during the year and has been recorded quite well into November; for example, I saw one near Alton on 8th November 1978. This year it also made it into November, one being seen on the 2nd which is a reasonably late record. The robberfly *Laphria marginata* is considered to be a distinctly local high summer insect which is perhaps least scarce in and around Hampshire woodlands. On 10th October I caught what I

at first took to be a late *Dioctria* at Selborne, only on closer inspection for it to turn out to be a female *L. marginata* so worn that the distinctive golden hairs had all rubbed away. The sighting of the common calcareous grassland species *Machimus atricapillus* on 26th October may also constitute a rather late record. The hoverfly *Ferdinandea cuprea* is locally common in woodland in my part of the country, occurring from middish April through to early autumn. My sighting of a female on 29th October 1986 may be of interest as a late record, perhaps also a sighting of the common species *Helophilus pendulus* on 6th November.

Bush crickets and grasshoppers are particularly prone to longevity during mild autumns and in 1986 the calcareous grassland grasshopper *Stenobothrus lineatus* was still prominent at Selborne on 7th October. In this part of England *Pholidoptera griseoaptera* can sometimes be heard stridulating during the first few days of November. However, prior to 1986 I had not heard it later than the 10th, this year I heard a lone male on the 15th. Also still active that same day was the local grasshopper *Gomphocerippus rufus*, of which a small colony exists at Selborne. I am convinced that I have found this species at the beginning of December, perhaps in 1978, but the record and the memory seem to have sunk Lethe-wards. MATTHEW OATES, The Lodge, Wyck Place, Wyck, Alton, Hampshire GU34 3AH.

BUTTERFLY RECORDS FROM THE ISLE OF WIGHT, 1985 – My wife and I spent the period 26.v. to 2.vi.1985 on the Isle of Wight, during which time we recorded 24 species of butterfly. As this total is so large for only one week and several interesting species are represented thought it was worth recording them formally.

*Erynnis tages* L., *Pyrgus malvae* L., *Gonepteryx rhamni* L., *Pieris brassicae* L., *P. rapae* L., *P. napi* L., *Anthocharis cardamines* L., *Callophrys rubi* L., *Lycaena phlaeas* L., *Cupido minimus* Guess., *Aricia agestis* D. & S., *Polyommatus icarus* Rolt., *Lysandra bellargus* Rott., *Celastrina argiolus* Ver., *Vanessa atalanta* L., *Cynthia cardui* L., *Aglais urticae* L., *Inachis io* L., *Polygonia c-album* L., *Boloria euphrosyne* L., *Melitaea cinxia* L., *Pararge aegeria* L., *Lasiommata megera* L., *Coenonympha pamphilus* L.

Of these several are worth mentioning in more detail: A specimen of *P. malvae* var. *taras* Berq. turned up at Brightstone Forest (E) where the type was quite common on the wider, flowery woodland rides and clearings. I was surprised at how localised *G. rhamni* seemed to be. We only saw this species at Firestone Copse, near Havenstreet, where it was the commonest butterfly on the wing.

We only saw one *L. bellargus* this year – an ovipositing female – at Freshwater Bay. In 1984 this butterfly was quite common there. Our record of *P. c-album* appears to be the only recent record from the eastern part of Brightstone Forest (see Heath, Pollard and Thomas 1984, *Atlas of Butterflies in Britain & Ireland*). Probably the most interesting record is that of *B. euphrosyne*. This butterfly was very common indeed in the cleared area of Parkhurst Forest. I found one which had fallen prey to a crab spider and this was kept as a confirmatory specimen. There appear to be no recent records of this species from the island (Heath, Pollard and Thomas *loc cit*). As well as being abundant on the coast at St. Catherine's Point *M. cinxia* was also found at Brightstone Down, nearly two miles inland. SITES VISITED: Bouldner SZ 3790, Brightstone Down SZ 4383, Brightstone Forest (E) SZ 4284 & 4184, Culver SZ 6285, Firestone Copse SZ 5590 & 5591, Freshwater Bay SZ 3585, Parkhurst Forest SZ 4790, Newtown SZ 4290, Shanklin SZ 5881, St. Catherine's Point SZ 4976.

A word of warning: To many butterfly hunters the most gratifying and amusing companion is his dog. However, we found Adders to be quite common in Brightstone Forest and a local Police Constable warned us to keep dogs on a lead in such places. This is advice well taken as Ben, our cross-collie, very nearly fell victim to one whilst closely observing a speckled wood butterfly. ADRIAN M. RILEY, 35 Park Mount, Harpenden, Hertfordshire.

FURTHER RECORDS OF THAUMETOPOEA PROCESSIONEA L. (OAK PROCESSIONARY MOTH), (LEP.: THAUMETOPOEIDAE), ON JERSEY. – Two individuals of this species were caught in the Rothamsted Insect Survey light trap which operates on the Island of Jersey; (Site No. 146) one on 10.ix.1985 (male) and one on 12.ix.1985 (female). So far as I am aware *processionea* has only been recorded five times from the British Isles (Foster 1983, *Ent. Rec.* **95**:216, Riley 1985, *Ent. Rec.* **97**: 110-111 and Riley 1986, *Ent. Rec.* **98**:146). Four of these occasions were at Rothamsted traps.

The present records are very interesting: *Processionea* is regarded as a rare migrant to the British Isles yet in 1985, when two individuals were caught, very few migrants were recorded at the Jersey trap. None were recorded around the time of the *processionea* captures. The standard Rothamsted trap only takes a small sample of insects flying near the light source. The fact that two *processionea* were caught would suggest that there were probably many more in the vicinity which were not. It is likely that such an immigration of an unusual species would be accompanied by more commonplace migrants but on this occasion it was not. This, along with the fact that one of the individuals was female (the first female recorded for the British Isles) suggests the possibility that the species has established a colony on Jersey.

This species is occasionally regarded as an horticultural pest (Carter, D. J. 1984. *Pest Lepidoptera of Europe*, 243-244. W. Junk, Dordrecht, Holland) and as such it's status on the Channel Islands should be fully investigated. Thanks are extended to Mrs. R. Collier who operates the Jersey trap. ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Hertfordshire.

ISCHNOMERA CINERASCENS PAND. (COL.: OEDEMERIDAE) IN BUCKINGHAMSHIRE. – During a visit to West Wycombe Park, Bucks., on 12th June, 1986, a single *Ischnomera cinerascens* was swept from an area of nettle, dog's mercury and enchanter's nightshade within High Wood (SU 829939). This is an area of open mature woodland dominated by beach, ash, horse chestnut and sycamore. My identification has been confirmed by Mr. P. Skidmore, who, with Mr. F. A. Hunter, drew attention to the beetle's presence in Britain after it was found in Duncombe Park, N. Yorks in 1979 (1981, *Entomologist's mon. Mag.,* **116** (1980): 129-132). The same paper mentions a further locality, Moccas Park, Herefs., but there have apparently been no further sites discovered until now.

*I. cinerascens* has recently been put forward as a species strongly associated with sites where there has been ecological continuity of dead wood habitats (P. T. Harding & F. Rose, 1986, *Pasture-Woodlands in Lowland Britain.* I. T. E., Huntingdon). It is conceivable that High Wood is an ancient woodland site, or that West Wycombe Park is an old pasture-woodland, but neither site is presently recognisable as such. Other dead wood associated Coleoptera present were *Denticollis linearis, Pyrochroa serraticornis, Phytoecia cylindrica, Endomychus coccineus* and *Rhizophagus bipustulatus.* K. N. A. ALEXANDER, Biological Survey Team, National Trust, Spitalgate Lane, Cirencester, Glos. GL7 2DE.

BUTTERFLIES IN NORTHERN CYPRUS – In a previous issue (*Ent. Rec.* **97**: 92) I gave a list of butterflies seen in Northern Cyprus in early June 1981. There are three corrections to make to this list:

*Maniola jurtina* L. should read *Maniola cypricola* Graves.

*Hipparchia fatua* Freyer should read *Hipparchia syriaca cypriaca* Staudinger.

*Cyaniris semiargus* Rottemburg should read *Glaucopsyche paphos* Chaman.

In the note I suggested that *Papilio machaon* L. might have adopted citrus as an alternative food plant in Cyprus, during summer when the fennel has completely dried out, as has *Papilio zelicaon* Lucas in California (New Scientist, 16th April 1981, p.160). This led to interesting comments.

Anthony Valletta, F.R.E.S. (of 257 Msida Street, B'Kara, Malta), did not exclude the possibility, but suggested that *P. machaon* might be using Rue as its summer foodplant, as occurs in Malta (*Ruta chalepensis*, and its var. *bracteosa*). The plant's habitat there is on uncultivated ground of upper globigerina limestone, on poor soil, but the roots go down into fissures; even so, they tend to dry up in summer, and shoot again after the first rains in late September and early October. Rue is also cultivated in gardens as a medicinal plant, where it is kept watered during the summer and would have foliage on which *P. machaon* could breed. In captivity, it breeds readily on Rue in Malta.

Roger White (of Plapouta 14, Ormidhia, Larnaca, Cyprus) did, however, confirm my surmise. *P. machaon* uses lemon trees in his garden as a foodplant. In November 1985, he was breeding out a number of larvae collected on citrus trees in Ormidhia gardens, several having hatched between 8th and 15th November. The butterfly shows a preference for lemon and citron, and is less attracted to oranges, grapefruit and mandarin, probably because of the stronger smelling foliage of the former. This seems to be significant information which needs to be put on record. R. C. DENING, 20 Vincent Road, Selsey, West Sussex.

BREEDING THE CLOUDED YELLOW BUTTERFLY IN 1986 — despite the poor summer I was pleased to see 3 male *Colias croceus* in a meadow near Norleywood, Hampshire, on 24th August. A further 3 males and 1 female, were seen at Corfe, Dorset, on 5th September. A visit to Corfe on 21st September produced a further 3 males, one very fresh, and a severely crippled var *helice* resting on a flower head. The condition of the wings was such as to preclude flight, and in all probability she was locally bred — no doubt the progeny of a much earlier immigration.

Although the *helice* proved infertile, another female taken on 5th September lived in captivity for 46 days, laying many eggs. Larvae were fed initially on birds-foot trefoil, later lucerne, and finally on white and red clover. Butterflies emerged between 7th November and 27th January. The 212 imagines comprised 109 males, 48 type females and 55 *helice*. The type/*helice* ratio being much as expected from a sex-linked dominant gene. A. S. HARMER. Covertside, Sway Road, Lymington, Hants.

BUTTERFLIES ON MANURE AND FARM EFFLUENT. The note on mud-puddling behaviour of the green-veined white (*Ent. Rec.* **99**: 27) prompts me to mention a comparable experience. On 25th July 1982, while walking along a bridleway in the bottom of a dry valley on the Yorkshire Wolds near Sledmere, I came across green-veined white butterflies on what appeared to be slightly weathered horse

droppings. The surrounding area was grassland cropped short by sheep. As I remember, there were two or three small gatherings and a photograph taken at the time shows a group of ten. All except two of the ten were relatively close to each other and it is impossible to say for certain whether all were male.

The small tortoiseshell appears to have a similar habit, but my evidence is only circumstantial. On several occasions I have disturbed odd ones from seepages around middens or where effluent is collected from the silage clamp and slurry store in the farmyard at home. These observations have been mainly in spring and usually, though not always, well away from dandelion and red dead-nettle which seem to be their only source of nectar at that time. An alternative explanation of course, could be that the bare earth or concrete in these situations is a suitably sheltered spot for sunbathing, but on one occasion there was a red admiral and that was in dappled shade. P. O. WINTER, West End Farm, Muston, Filey, North Yorkshire, YO14 0ES.

NOTES ON THE BRITISH SPECIES OF DIORYCTRIA, ZELL. (LEP.: PYRALIDAE) — The currently accepted status of the genus *Dioryctria* is admirably stated by Goater, 1986 (*British Pyralid Moths*), and can be briefly summarised as follows:

| | |
|---|---|
| *abietella* D. & S. | Larva lives in a cone or occasionally in pith and dead shoots of *Pinus sylvestris.* |
| *mutatella* Fuchs. | Genitalia of this and preceding species similar and rather variable. Small but constant differences in size and markings. Taken together allow firm determination to be made. Larva also lives in *P. sylvestris*. Life histories of the two species not adequately differentiated. |
| *schuetzeella* Fuchs. | Readily distinguished from the previous two species. Larva in *Picea abies* . |

On 10th August 1985, Col. D. H. Sterling, B. R. Baker, Dr. R. Langmaid and P. H. Sterling collected growing cones of *P. abies*, which showed external signs of larval workings, from trees in Unhill Wood (v.c. 22). In addition to a single *Eupithecia abietaria* Goetz. and a number of *Cydia strobilella* L., a large number of specimens of *Dioryctria* species were bred, a few of which emerged in October 1985 (kept outdoors), and the majority in 1986 — all appeared to be *D. abietella*, but we were unhappy with this as all the British literature gave *Pinus sylvestris* as the only foodplant. (Goater *loc. cit*; Emmet, 1979, *A Field Guide to the Smaller British Lepidoptera*; Beirne, 1952, *British Pyralid and plume Moths*; Meyrick, 1927, *Revised Handbook of British Lepidoptera*). BRB made a genitalia preparation of a male, and passed it to Mr. Shaffer of the British Museum (Natural History), who confirmed that it appeared to be

*abietella*. Subsequently, DHS dissected a series of both sexes but was unable to find any constant differences between these and caught specimens previously identified as *abietella*, although it was impossible to know whether, as larvae, the caught specimens were associated with *Pinus abies* or *P. sylvestris*.

It is possible that *abietella* feeds on the cone of either *P. abies* or *P. sylvestris*. However, very few *P. sylvestris* feeders are known to have *P. abies* as an alternative foodplant. Of the 26 species listed in Emmet (*loc cit*) as feeding on *P. sylvestris*, only 3 are shown as also feeding on *P. abies*. BRB obtained several pairings from the bred *Dioryctria* but was unable to persuade them to lay on fresh sprigs of *P. sylvestris* bearing green cones. Further investigation is needed, but the following suggestions are advanced for consideration:

1. Although *P. abies* has never been recorded as a foodplant for *D. abietella*, both *P. sylvestris* and *P. abies* are acceptable foodplants.
2. There is a fourth British *Dioryctria* species closely related to the *P. sylvestris* feeding *abietella* and *mutatella*. but whose foodplant is *P. abies*.
3. *D. mutatella* feeds on *P. sylvestris* and *D. abietella* feeds on *P. abies*. As *D. mutatella* was not originally considered a "good" species, the larval habits of *D. abietella* f. *mutatella*, as it was earlier known, could have been correctly observed and described, but applied incorrectly to *D. abietella* as well as *D. mutatella* when the species were split.

It would be of value to compare genitalia and specimens of any presumed *D. abietella* actually bred from *P. sylvestris*, if such specimens are held in any collections. D. H. STERLING 2 Hampton Lane, Winchester, Hants. SO22 5LF.

PHRAGMATOBIA FULIGINOSA L. (LEP.: ARCTIIDAE) A POST-SCRIPT. — I am able to add some further observations in relation to my account of certain aspects of the life history of the ruby tiger (*Ent. Rec.* **98**:129). The fine specimens in the National Collection indicating the form found in the Orkney Islands are in fact not typical. Mr. R. I. Lorimer who donated them to the collection informs me that they were bred in captivity in the South of England, and may have included F2 generation moths. In early Autumn of 1986 Mr. Lorimer kindly sent me some full fed *fuliginosa* larvae from the Orkneys; some reluctantly pupated instead of hibernating as larvae and the resulting moths were typical *borealis* Staud., perhaps slightly darker than average — quite unlike the British Museum specimens which have now been suitably relabelled. B. Kettlewell (*The Evolution of Melanism*, 1973) notes that G. Harper had informed him that *borealis* offspring from Scotland which were forced at 70°F to emerge in Winter were markedly redder, approaching the

English form; those bred by Mr. Lorimer seem to substantiate this.

I drew attention to the fact that the ruby tiger has a series of black spots upon the dorsal aspect of the abdomen, and not a stripe. The second Orcadian specimen to emerge possessed a broad black dorsal abdominal stripe! I believe this to be an uncommon form, but which can only be identified before the insect dries out after death.

Although *fuliginosa* appears to be bivoltine in Counties Cork and Kerry, J. Bradley and E. C. Pelham-Clinton (*Ent. Gaz.* **18**:115) produce evidence that it is single brooded in the Burren of Co. Clare, flying in May and June, although they do not indicate whether by day or by night.

On September 25th 1986 I found several *fuliginosa* larvae on spindle (*Euonymus europaeus*) near Swanley, Kent; they completed their growth on this. In view of the observation that many Arctiid moths tend to lay their eggs on shrubs (M. Shaw: *Ent. Rec.* **97**:31) although the larvae feed mainly upon herbaceous plants, this particular incident seems worth recording. – B. K. WEST, 36 Briar Road, Bexley, Kent.

ZOROCHROS MINIMUS (BOIS. & LAC.) (COL.: ELATERIDAE) AT THE TOPS OF MOUNTAINS. The usual place to find *Z. minimus* (=*Cryptohypnus dermestoides* Herbst) is in gravel, under small stones or mats of vegetation at the sides of streams and rivers. In Scotland, it is widespread in this habitat and often very common, especially in the highlands. On two occasions I have come across the species in a different habitat – the tops of mountains. The first of these was in July 1974, when I found a number of examples near the summit of Ben More Coigach, Wester Ross (NC095045 alt. 742m) under small stones in an area practically devoid of vegetation. The second was in July 1983, when I met with the species near the top of Quinag, West Ross (NC205280 alt. ca. 700m), again under small stones on a gravelly base. The only previous mention I have found of this species occurring at high altitude in Britain is by Steel and Woodroffe (1969, *Trans. Soc. Brit. Entom.* **18**: 91) who reported its occurrence at the roots of thyme at 634 m on Hallival on Rhum.

The finding of these specimens in an unusual habitat, together with the report of *Z. flavipes* (Aube) in Britain (Cooter, J. 1983 *Entomologist's mon. Magazine* **119**:233) made me compare my high altitude specimens carefully with specimens found at low altitudes. In doing this, I have examined in all about 150 specimens from about 20 different sites in highland and lowland Scotland and have dissected many of them. These have included a large series from the Dorback burn site from which my friend Mr. Cooter obtained his specimens of *Z. flavipes.*

All I can state at this stage is that the mountain top specimens

fall within the considerable range of size, form and coloration, shown by low altitude examples, a variation often quite marked among examples collected at the same time from the same site. I cannot appreciate the presence of more than one species but whether my material constitutes *Z. minimus* or *Z. flavipes* is a matter for further study. I have shown the mountain specimens to my friend Mr. Mendel and he likewise could see no consistent difference between them and my low altitude specimens.

It is just conceivable that the mountain top colonies are sufficiently isolated to represent a stage in speciation but confirmation of this would seem beyond present day attainments. It may be relevant that all three mountains have high rainfalls, that on Hallival exceeding 3200 mm (130 in) annually, which could make a mountain top habitat less different from low lying streamsides than might at first be apparent.

I thank Mr. Howard Mendel for his comments on my specimens. J. A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

PSEUDATEMELIA JOSEPHINAE TOLL (LEP.: OECOPHORIDAE) IN CUMBRIA — This species, long confused with *P. flavifrontella* D. & S. seems first to have been recorded in Britain by P. A. Goddard (*Ent. Rec.* **78**: 239; *Bull. amat.Ent.Soc.* **25**: 88). D. J. L. Agassiz (*Proc. Trans. Br. ent. nat.Hist.Soc.* **13**:83-84) provides taxonomic details for separating the two species and includes good figures of the genitalia of both sexes.

My Cumbrian records under *flavifrontella* all come from v.c. 69 — there being no records of either species from v.c.70 — are as follows: Windermere (J. B. Hodgkinson — Ellis List, 1940); Grange-over-Sands (A. E. Wright); Arnside, 1930 (H.C. Heyward teste A. E. Wright); Witherslack, 1970 (R. Fairclough); Yewbarrow (H. N. Michaelis); Witherslack and Roudsea Wood NNR (N. L. Birkitt); Ulverston (E. F. Hancock) and Glencoyne Wood, near Ullswater (G. A. K. Hervey).

I have in my possession the specimens from the A. E. Wright collection and have examined the genitalia of these, as well as my own specimens with the following results: Grange-over-Sands 18.vii. 1917 (male) and 24.vii.1935 (male); Roudsea Wood NNR 28.vi.1959 (female); Witherslack 6.vii.1961 (female) all proved to be *josephinae*. Of the four specimens in the A. E. Wright collection under *flavifrontella*, only one has an abdomen, which proved to be a female of this species. It is worth noting that all of these four specimens are without data labels, and are mounted on old fashioned brass pins. It is unlikely that they are Cumbrian specimens.

Of the other records, Mr. Fairclough (*in litt*) confirms that his Witherslack specimen is in fact *josephinae*, as is Mr. Hancock's specimen; a Cumbrian female taken by H. N. Michaelis (in the Man-

chester University Museum) and two specimens in the Canon Hervey collection (at the Brathey Field Centre, Ambleside).

Thus at the present time we have no confirmed specimens of *flavifrontella* from Cumbria. Other records of *josephinae* include a few localities in southern England, Cairngorm NNR in Scotland (McAlpine, *Ent. Rec.* **91**:67) and Aberdeenshire (Palmer, *Ent. Rec.* **88**:201).

My thanks are due to E. F. Hancock, R. Fairclough, C. Johnson (for giving me access to the Michaelis collection) and S. Townsend for similar facilities in connection with the Canon Hervey collection.
Dr. NEVILLE BIRKITT, Kendal Wood, New Hutton, Kendal, Cumbria LA8 0AQ.

BOOK TALK NINE. — The Rev. John Burrell's "A catalogue of [coleopterous] insects found in Norfolk", must be one of the rarest as well as earliest — perhaps *the* earliest — of published local lists. Issued in 1807-10 in *Trans.ent.Soc.Lond.* **1**(1-2):101-240, it includes some 800 species with brief notes on each. Burrell was also a lepidopterist, and supplied A. H. Haworth with Norfolk records for the *Lepidoptera Britannica* (1803-28). My copy of the latter formerly belonged to Burrell and bears his ms. annotations, with on page 98 the following quaint inscription apparently with reference to *Scoliopteryx libatrix* L.: The Herald: "July 1808, a Pair fell in Statu Cop. into my Cart, as I drove my Family through a lane near Hoe in Norfolk. J.B."

Probably the best known, and certainly the most informative, of those useful works arranged in calendar form, is J. W. Tutt's *Practical hints for the field lepidopterist* (3 vols., 1901-05. A 2nd edition of vol. 1, with additional material, appeared in 1908). Others similarly arranged that come to mind are: R. Shields' *Practical hints respecting moths and butterflies* (1856); J. Merrin's *The Lepidopterist's calendar* 1860; and a 2nd much enlarged edition in 1875; H. T. Stainton's *The entomologist's companion; being a guide to the collection of microlepidoptera and comprising a calendar of the British Tineidae* (1st edition, 1852; 2nd edition, 1854); and, C. Jourdheuille's *Calendrier du microlepidoteriste. Recherche des chenilles*, 3 parts, 74pp. (Originally published in *Annls. Soc. ent. Fr.* 1869-70, 4th ser. **IX**: 533-548, **X**:111-134, 233-266). — J. M. CHALMERS-HUNT.

FURTHER SCOTTISH RECORDS OF THE SCARCE FOOTMAN, EILEMA COMPLANA L. (LEP.: ARCTIIDAE) — A group of records was published recently for south-west Scotland (Wallace & Wallace, *Ent. Rec.* **98**: 209-210). Those records were based only on larvae. This year, a larva was successfully reared from Ringdoo, Muncraig, Borgue (grid ref 25/603457). The larva was offered a variety of seaside lichens and fed upon *Ramalina*.

At the time of writing the first note, the present author was unaware of the Scottish Insects Record Index (SIRI) run by the Royal Museum of Scotland, Edinburgh; this ignorance was correctly and usefully exposed by Shaw (*Ent. Rec.*, (1987) **99**: 37-38). The author is most grateful to Miss Isobel Baldwin of the Royal Museum of Scotland for supplying photocopies of historic published records for *Eilema complana*. This note provides an opportunity to commend the SIRI to entomologists, particularly holidaying 'foreigners'.

The additional records for Scotland are:–

(1) Elgin – rare – Mr. Gellie. Gordon, G. *Zoologist* for 1861: 7667. There are no recent records for Elgin. Ms Christine Sangster of the Elgin Museum reports that there are specimens in their collection, including some in material assembled by a local collector; unfortunately, all these lack data. The similar common footman, which has *Lithosia complanula* Boisduval as a popular synonym, has been recently recorded from Elgin in Heath *et al* (1979) *Moths and Butterflies of Great Britain and Ireland* **9**, Mr. Gellie's record may refer to the common footman.

(2) Marchmount, Dumfries – not common. Lenonn, W. *Transactions of the Dumfries & Galloway Natural History & Antiquarian Society* for 1862-3: 56. This record is believable, however, it is possible that the record could refer to the common footman which is recorded from the area by Heath *et al* (*op. cit*) but is missing from Lenonn's list. Dumfries town does not seem to offer the rocky coast that the scarce footman seems to require in south west Scotland.

(3) Mull of Galloway – one – Mr. Henderson the lighthouse keeper. Jackson, D. J. *Ent. Rec.* **22**:117. There would seem to be no good reason to doubt this record.

(4) Galashiels. A very dubious larval record is doubted and discussed by Bolam, G. *History of the Berwickshire Naturalist's Club* (1926) **25**: 554. I. D. WALLACE, Liverpool Museum 6.4.1987.

THE FEATHERED BRINDLE, APOROPHYLA AUSTRALIS (BOISD.) (LEP.: NOCTUIDAE) FROM PEMBROKESHIRE – On 22.v.1986, an attractive, but unfamiliar, large noctuid caterpillar was accidently dislodged from vegetation alongside a car park at Broomhill Burrows, Freshwater West, Pembrokeshire (grid ref SM(12) 885000). After a short search, another two were found. A variety of adjacent foodplants were offered and kidney vetch *Anthyllis vulneraria* L. was accepted. Within a week all three larvae had pupated; two shrivelled within their cocoons but a slightly crippled female emerged the following September.

Heath *et al* (1983) *Moths & Butterflies of Great Britain & Ireland* **10** show that the species has been recorded from south-west Wales but that area is not given in the distributional summary by Skinner, B. (1984) *Colour Identification Guide to Moths of the British Isles.* This suggests that there are no recent Welsh records. I. D. WALLACE, Liverpool Museum, 2.4.1987.

AN INTERESTING SPECIMEN OF THE WHITE PROMINENT MOTH – following the recent articles in this Journal about *Leucodontia bicoloria* D. & S. (S.C.S. Brown, *Ent. Rec.* **98**: 9-10 and R.F. Haynes **96**: 1-6) I was fascinated to notice in the British Museum (Natural History) under one of the assumed British specimens of *bicoloria* the note "Seen by the Poet Swinburn". This refers to the great Victorian poet Algernon Charles Swinburn, I presume. Was he, perhaps, a collector? Can anyone throw any light on this? Dr. P. J. EDWARDS, Stars Cottage, Stars Lane, Dinton, Bucks.

THE WHITE ADMIRAL BUTTERFLY IN CENTRAL OXFORD – on three occasions during the summers of 1985 and 1986 I observed specimens of *Lagoda camilla* L. in Central Oxford. The first was on the afternoon of 17.viii.1985, when I observed a butterfly settled on the pavement adjacent to the Town Hall. The second was observed settled in a quiet street on 14.vii.1986, and a third two days later flying near a church in main shopping street (Cornmarket). All seemed unlikely habitats for this fine butterfly. K. EDWARDS 15 Cobden Street, Dundee.

# Current Literature

**Sphingidae Mundi: Hawk Moths of the world** by **Bernard D'Abrera.** 226 pp. 80 colour plates. 250 x 340 mm. E. W. Classey Ltd., 1987. £97.50.

This superb work on the hawk-moths of the world is the first single volume on the Sphingidae to be published for over 80 years, and fulfills a need long felt by students and collectors of this interesting family.

The book follows the now familiar format of Bernard D' Abrera's preceding works on the Butterflies of the World with a short introduction followed by a two page glossary and a systematic catalogue of genera. The following 200 pages comprise a systematic, illustrated catalogue of the known species of Sphingidae. Over 1000

species are illustrated life size and in full colour. The specimens, which include over 100 types, are predominately from the extensive collections of the British Museum (Natural History). The descriptions which appear opposite the relevant page are brief, but informative, giving geographic distribution, description and historic notes. For many species there is no indication of larval foodplant, but the introduction promises us a companion volume dealing with the known early stages and associated foodplants of these insects.

This is not a cheap book, but a "must" for all serious students of the much studied family Sphingidae. The work is limited to an edition of 2000 copies, and is no doubt a sound investment. C. M. BUCKINGHAM.

**Butterflies of the British Isles: The Nymphalidae** By **Michael Easterbrook**. 24pp. 34 figs. including 28 in colour. Limp. Shire Natural History no. 19. 1987. Price £1.25.

This is another excellent booklet in the series by Shire Natural History. After a brief introduction, the nymphalids are considered species by species under general headings of those occuring in gardens, woodlands, and other open habitats. The author manages to pack a good deal of interesting information on the natural history of these butterflies into a relatively short space. The booklet concludes with notes on observing, breeding and conservation, with a brief but useful bibliography.

The quality of the illustrations and text in such a small volume is very good indeed, and the price!! Tremendous value. PAUL SOKOLOFF.

**F. W. Frohawk: his life and work** By **June Chatfield**. 184 pp. Many black and white and colour illustrations. Crowood, 1987. Boards £16.95.

F. W. Frohawk (1861-1946) has probably contributed more to our understanding of the life histories of British butterflies than anyone else, before or since. His two major books, the two-volume *The Natural History of British Butterflies* (1924) and *The Complete Book of British Butterflies* (1934) are classics and contain many original illustrations and observations which are still the source of much of the information in modern books on butterflies. He was a keen observer of nature and, of course, a first-class illustrator and artist.

June Chatfield's sensitive and sympathetic biography tells us much about Frohawk's character, his financial difficulties, and above all his compulsive curiosity about nature. Frohawk was essentially a "British" naturalist with strong attachments to his

favourite localities. True, he painted and sketched foreign birds and mammals, but tended to use caged individuals and museum specimens as models. But above all he worked from live examples, often making extensive annotations to his work in order to highlight fine details of structure. He was for many years natural history editor of *The Field* and contributed numerous articles, illustrated with his own drawings, on many aspects of British natural history. He also illustrated articles, scientific papers and books written by others.

This book contains many hitherto unpublished drawings and paintings as well as many that have already been published. There are also photographs of Frohawk armed with a butterfly net, sometimes in the company of his daughter, Valezina, who was named after the well-known female-limited form of the silver-washed fritillary. Dr. Chatfield acknowledges the help received from Valezina, Viscountess Bolingbroke, in gathering together biographical information and for access to her father's work.

This is a beautifully produced book and I heartily congratulate both author and publisher for the efforts they have made. It is a must for all lepidopterists interested in one of the most important personages in the development of the history of their hobby. Indeed I think that for interest and beauty it will emerge as one of the best natural history books to be published in 1987. What an ideal present for a naturalist! DENIS F. OWEN.

**Noctuelles et Géomètres d'Europe** By **Jules Culot.** Volume II Noctuelles. 243 pp. plus 43 colour plates. (nos. 39-81). Boards. Reprinted 1986. Volume III Géomètres. 269 pp. plus 37 colour plates. Boards. Reprinted 1987 by Apollo Books, Lundbjej-36, DK-5700 Svendborg, Denmark. Prices Dkr 690 per volume (or 638 Dkr each if all four volumes ordered).

A full review of Volume I appeared recently (*Ent. Rec.* **98**: 261-262). Volume II completes the Noctuidae, and Volume III comprises the first part of the Geometridae — to be completed in Volume IV. The colour plates continue to be the main focus of these reprints of Culot's rare work. The high production standards set in Volume I have been maintained, and the quality of many of the plates can only be described as mouthwatering! The white paper used for the plates (cream was used in the original version) makes a number of the white ground-colour geometrids almost fade into the background.

This work must still be recommended for those who appreciate good quality artwork and, as it contains the most accurate illustrations of European moths currently available, an identification guide. PAUL SOKOLOFF.

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# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

*(Founded by J. W. TUTT on 15th April 1890)*

## CONTENTS



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**SPECIAL NOTICE.** – The Editor would be willing to consider the purchase of a limited number of certain back issues.

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## A FIELD GUIDE TO THE SMALLER BRITISH LEPIDOPTERA

Existing stocks are almost exhausted and the British Entomological & Natural History Society proposes to publish a new and expanded edition in 1988. This will include the species added to the British list since the publication of the present edition in 1979 and additional information on those already included. Many microlepidopterists will have annotated their copies with addenda and corrigenda regarding habits, foodplants and the timing of the stages. If you like your notes to be incorporated, please send them to A. M. Emmet, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF before the 30th November 1987. Please submit by families written on one side of the paper. Your contribution will be acknowledged in the new edition.

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## SUBSCRIPTIONS 1988

We are pleased to announce that subscription rates will remain unchanged for 1988. Will subscribers please use the enclosed form to make their payments. Early payment would be appreciated as this saves costs and makes life easier for our officers, all of whom generously volunteer their time to help the *Record*.

# AUCTION OF BOOKS FROM THE LIBRARY OF THE LATE LT.-COL. W. B. L. MANLEY

By BRIAN O. C. GARDINER*

Books from the library of the author of *A Field Guide to the Butterflies & Burnets of Spain* were auctioned at Sotheby's on May 28th 1987. Many of the books were in fine modern leather bindings and bore, not his, but Mrs. Manley's bookplate. Clearly only part of his original holdings, I did not notice any copies of, or material associated with, his own book; indeed the only really Spanish material present was a run of the journal *Shilap*.

In spite of the fact that the total price realised for the 28 lots was £9,240 (plus of course the 10% premium) and exceeded the given estimates of between £5,200 and £6,950, the auctioneers did the seller no service by lumping together up to 72 books in one lot, thereby making it a dealers rather than an entomologists sale. Sold individually and advertised in the entomological journals such as this one, I believe that two or three times the price would have been realised for the contents of the multiple lots. While an individual may be willing to bid fifty or sixty pounds for a copy of Frohawk's *Complete Book of British Butterflies*, he is hardly likely to give £660 for three copies plus 69 other books even when these include three copies of Frohawk's even rarer work on Aberrations. Since this price for the lot works out at less than £10 per book and the six Frohawks alone (being all in near mint condition and dust-wrappers) are currently fetching up to £70 each on the market, this lot was an obvious bargain as many of the other books in it were also ones I have seen around at up to the £50 mark.

The other multiple lots sold, although fetching good prices were also, in my opinion, bargains for the material they contained. As described below, where books were sold individually, some exceptionally high prices were obtained.

Lot 580 was a very curious mix of periodicals and included an excellent, probably complete, run of the Spanish *Shilap*, a journal that perhaps deserves to be better known and was not even mentioned in the catalogue entry! This lot went for £242, and as it included the now scarce *Entomologist's Annual* of H. T. Stainton, a dozen volumes of the French *Alexanor* all beautifully bound in leather, not to mention a few feet of shelf run of assorted other journals, was well worth the money.

Lot 589 consisted of 14 books on butterflies and their larvae, including works by Kirby, Tutt, Wilson, Morris, and in view of the plethora of coloured plates present made £418.

*18, Chesterton Hall Crescent, Cambridge, CB4 1AP.

At £440 lot 595 contained several works which alone I have seen advertised at up to £100. Included were Packard's *Monograph of the Bombycine moths of North America,* Kappel & Kirby's *British & European Butterflies & Moths*, Eltringham's *African Mimetic Butterflies,* Sharpe's *Monograph of the genus Teracolus*, Waterhouses's *Butterflies of Australia,* Warren's *Monograph of the Genus Erebia,* and Bright & Leeds' *Monograph of the Chalkhill Blue Butterfly.*

Also a bargin in containing books worth well over £100 per volume when offered individually was lot 600 at £660, for this included no less than three copies of Wood's *Index Entomologicus* and four of the volumes of J. F. Stephen's *Illustrations of British Entomology.*

Two copies of *The Natural history of British Butterflies* by F. W. Frohawk (mistakenly attributed to 1926) made £374 which in view of the fact that one copy was defective was surprisingly dear, but then Sotheby's who also sold a copy of this work at £330 not so long ago seem very good at getting over the odds for this book. Since this lot was bought by a well-known dealer I suspect they will reappear on the market at around the £250 mark and it is no wonder that the three or four copies that were currently on offer in the (retail) bookshops at well under this price (£125 to £150) were immediately snapped up after this sale.

Barbut's *The Genera Insectorum of Linnaeus*, 1781 with the plates coloured, was a reasonable buy at £330 as it is listed over £200 more than this in a recent catalogue. So too was Moses Harris's *Exposition of English Insects* at £286 but exceedingly expensive was a not particularly good copy of Marshal & De Niceville's *Butterflies from India Burmah & Ceylon* at £220 since it was available in Cambridge at £90, finely bound.

A very long run of 66 years of the South London (later British) Entomological Society beautifully bound seemed a very reasonable buy at £330 as the leather binding alone would cost more than that (and probably did, for they were very new looking) were it done today. At a price of only £286, a run of 36 volumes of *The Entomologist's Gazette* was a bargain.

In contrast to the above, a price of £935 for the three volumes of *British Butterflies and Moths and their Transformations* by Humphreys & Westwood reflects the giddy heights to which this common work has now risen and while I regret many missed opportunities in life, my purchase, years ago, of this work for £1.50 is not one of them! Also giddy was the price of £187 for a somewhat soiled copy of *European Butterflies & Moths* a number of copies of which are currently available at around the £100 mark. Reasonable, however, at the same price was Lang's *Butterflies of Europe* which is usually twice the price of the Kirby. Also dear was the four volumes

of Morris's *British Moths* at £132 since two copies at the time were available in Cambridge at £85 and even Southeran's in London only wanted £120 for a good copy. It is very sad that the prices now being realised for some works reflect not their intrinsic value or scarcity, but the "frameability" of their plates.

Other works sold included the following:—

*Lepidoptera Exotica* by A. G. Butler for £308, *Die Gross-Schmetterlinge Europas* by E. Hofmann together with *Die Schmetterlingsbuch* by F.Rebel (This work an association copy inscribed to Edward Meyrick), £187; *Lepidoptera von Madagascar* by M. Saalmuller, a very rare work with only 14 coloured plates, £418. *South African Butterflies* by R. Trimen & J. H. Bowker, another association copy inscribed by the authors to F. C. Selous, £209.

The remaining lots from Lt-Col. Manley's library were non-entomological, but, from a different source, two copies of Distant's *Rhopalocera Malayana* were in the sale. The prices realised reflected their condition; the good one going for £715 and the rebinding copy for £550.

**Note added in proof.** At the same time as we received the proofs of this article, we had a catalogue from a French bookdealer offering items bought at the auction. Allowing for slight variation in the exchange rate, approximate prices asked for some of the item detailed above are as follows:—

*The Entomologist's Annual* £250; Frohawk's *Varieties*, 1st ed. £290, 2nd ed. £150; Bright & Leeds £95; Wood's *Index* £150; Stephens's *Illustrations* (4 vols) £550; Packard's *Bombycine moths* £120; Eltringham's *African Mimetic Butterflies* £145; Kappel & Kirby's *European Butterflies* £180. Also in the catalogue were a number of books from Col. Manley's Library which were *not* in the auction and must therefore have been bought elsewhere and confirms our remark that only part of his library had been auctioned— B.O.C.G.

SCHRANKIA TAENIALIS HBN. (LEP.: NOCTUIDAE) IN N. W. KENT. — On July 13th 1987 my garden m.v. light attracted a female specimen of this insect (identity confirmed by J. Chalmers-Hunt). The last definite record for the area was for July 17th 1894 at Bexley Park Wood where the moth was undoubtedly resident, as it was further east in Darenth Wood and Swanscombe Park Wood (recently destroyed for chalk removal), being seen in the latter as late as 1903 (J. Chalmers-Hunt, *Butterflies and Moth of Kent*, 1968 **2**). I am sure the recent record confirms the insect's continued presence in N. W. Kent despite an absence of sightings for more than eighty years and recent depredation by the Forestry Commission in the woodland in the vicinity of my home. — B. K. WEST, 36 Briar Road, Dartford, Kent.

# AN EXTRACT FROM THE DIARY OF KATHERINE PLYMLEY (1758-1829)

By ROBERT MAYS*

The late P. B. M. Allan whose entertaining book *Leaves from a Moth-Hunter's Note Book* was posthumously published in 1980 recalled in that volume how many years earlier he had visited a country-house in Shropshire, when endeavouring to solve the mystery of the appearances of *Iphiclides podalirius* Scop., the scarce swallowtail butterfly, which were recorded in that county early last century. His welcome reception gave him the opportunity of consulting the diaries of Mistress Katherine Plymley, which are now deposited, together with a large collection of the related Corbett family papers, in the County Record Office (Ref SRO 567). A lepidopterist of no mean order, Katherine Plymley (1758 - 1829), was responsible, in addition to her remarkable diaries which spanned over 30 years, for a number of memoirs and notebooks, one of which contains her account of the successful rearing of the death's head hawk moth, in the year 1806; it is given below, by kind permission of Charles E. Corbett. It is as she wrote it, except that it has been broken into paragraphs for easier reading.

"DEATHS HEAD MOTH

**Sphinx Atropos**

The first time I ever saw the caterpillar was in 1801, it was sent from Ludlow ready to go into mold. Upon examination long after it was found not to have formed its chrysalis – In 1803 we had two chrysalis's sent us by Dr. DuGard, these (following the directions in a work on Entomology) were kept in a damp place, but, though fine chrysalises, they did not come out – In 1804 we had four caterpillars sent us; one from near Frodesly, one from Acton Burnel, one from Shrewsbury and one from Ludlow, three of these made fine chrysalises. Having experienced the bad effect of damp, (for those kept damp became mouldy) we kept these in the room we constantly sat in, but they did not come out.

In 1806 Mifs Adams sent us one ready to go into mold, it came three miles beyond Shrewsbury – this was the 11th of August, it went into mold immediately – In a German work Jane had read an account of the manner in which Schroeter the Deacon of Weimar treated these caterpillars successfully, and we determined to follow his directions exactly – When it had been a fortnight under mold it was taken out and found a very fine lively chrysalis, it was placed upon light mold and sand in a box covered only with muslin, and kept in a warm south room, where the sun occasionally shone upon

*Barnards Farm, Debden Green, Saffron Walden, Essex.

it. It was observed to turn at least once a day, lying alternately upon its back and its face. When the weather became cooler, it was placed at night in a wardrobe that joined the kitchen chimney, and in the day moved about to let the sun shine upon it as long as it could. It was always observed to be particularly lively upon being first placed in a morning in the sun, turning often round and round several times and in different directions. It became gradually darker.

When we began to have fires in our parlour, which, being a fine season, was not till the 11th of October, we placed it upon the table by us when the sun did not shine, otherwise it seemed best in the sun. On the 26th of October it changed colour very remarkably, it had become very dark, though in the rings, at times particularly it had a rich yellow brown. On this day the colour tho' still dark appeared very rich; it had for some days before appeared very lively, now it was more still, and at night alarmed us with the appearance of being shrunk and dented, in the part covering the wings particularly; it afterwards turned and looked better.

The following morning it was free from dents, looked uncommonly well, and the colour, though dark, very rich. Over all those parts which were to be yellow in the Moth it was of a glowing red brown. It was very lively, turning itself often – the day was fine and we kept it constantly in the sun; in the course of the day we heard distincly, two or three times, a faint sound like the chrysalis cracking the part covering the wings, dented in and out at times with a pulse like motion, and at times it trembled. Schroeter had observed that all his Moths came out between the hours of four and seven in the evening, which he looked upon as a fine provision of nature, for as these Moths fly in the twilight of the evening and morning, they had the night to rest and dry their wings and were ready for their flight next morning.

After sunset we kept ours upon the table by us. My Sister, Jane, Waties and myself had all the pleasure to see the Moth burst its chrysalis; it crack'd in an instant, louder than we had before heard it, and the legs appeared struggling for freedom, in lefs than a minute it was entirely disengaged. It was lying upon its back when the legs first appeared, and when its head was first seen part of the chrysalis was like a mask upon its face, upon turning round to creep out this fell off, and we saw it would be a most perfect Moth, the wings were then of course wet and folded up. This was a little before 7 o'clock in the evening. We immediately put it in a large bandbox and covered it up, making air holes in the lid. Looking at it about an hour after, it had crept up the side of the box and its wings were much lengthened.

The next morning we found it in high perfection and very still – I made a painting of it in its closed state that day, it remaining perfectly quiet wherever I placed it – At night we returned it to its

box and put a nosegay into it of such flowers as we thought had most honey and were then to be met with; particularly the Alpine Coltsfoot which attracts Flies and Butterflies, but the next morning it appeared to have been quite stationary and not to have gone to the flowers.

I was now to paint it flying, and having finished the upper wings it became necessary for me gently to put them open to see the body and underwings. We were apprised that when taken this Moth made a noise by the means, as it is said, of striking the tongue against the palpi, we were therefore prepared to hear it, as we supposed the disturbing it, however gently, would produce it – in fact it did, it resembled the softest chirp of a bird – we heard it often, as every time I had occasion to move it, it generally gave its chirp, when it had moved more, and was become in a degree restlefs, it ceased to make it.

It was however generally very quiet; once or twice it fled a little about the room and came against my check with such strength as to give rather a smart blow – at night it was again put into its box and remained still as before – The next day it was carried in a band-box to Shrewsbury as Mrs. P. Windsor had requested to see it and I thought Dr. DuGard would be gratified by a sight of it and I wished Mifs Adams to see what the Caterpillar had produced – I sent it by our servant on foot – He brought it back in the evening not in the least injured by its journey – It had before paid a visit to the Hall and been seen by the family, it now went again for the servants to see it.

We brought it back, and towards twilight we turned it out in our kitchen garden, and had the pleasure to see it take its flight with great vigour – We soon lost sight of it as it flew to the grove".

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NOTES ON REARING THE COMMON BLUE BUTTERFLY (POLYOMMATUS ICARUS ROTT.) – In early April, I received a gift of six larvae from eggs laid by a female *P. icarus* f. *caerulescens* Wheeler. The larvae were feeding on *Lotus corniculatus* (bird's-foot trefoil). Drought and high temperatures had dried up all the food-plant – the donor of the larvae was feeding his on fresh pods of *Lotus edulis*, but as this plant was not available to me I tried fresh, tender examples of broad bean, *Vicia faba*. By removing the skin and splitting the bean, the young larvae were able to feed on the tender flesh of the bean. As they grew, they were able to bore into whole beans.

All the larvae pupated successfully, producing one male and five female f. *caerulescens*. This useful technique of using solid food may have wider application when breeding some of our butterflies. ANTHONY VALLETTA 257 M'sida Street, B'Kara, Malta.

# TWO SPECIES OF SCUTTLE FLY (DIPTERA:PHORIDAE) NEW TO BRITISH LIST

By R. H. L. DISNEY*

Continuing revision of the British species of *Megaselia* Rondani has revealed two further additions to the British List as well as clarification of some synonyms proposed by Robinson (1981). The details are given velow.

*Megaselia brevior* (Schmitz, 1924)

Between 9 and 14 July 1978 I collected a series of this species from the garden of Juniper Hall Field Centre, Surrey, (Grid ref. 51/1752). They were provisionally assigned to *M. berndseni* (Schmitz) with a question mark. Subsequently this species was re-evaluated and *M. pygmaeoides* (Lundbeck) synonymised with it (Disney, 1985). Following this it became evident that the Juniper Hall specimens belong to *M. brevior,* a species previously known from Austria, Germany, Spain and the Azores.

*M. brevior* males differ from *M. berndseni* by having the terminal hairs of the proctiger only as strong as the hairs of the cerci; in having only a few short, almost colourless spines on the lower faces of the labella; and having shorter costal cilia and bristles on the axillary ridge of the wing. I have compared my specimens with some from the Schmitz collection.

*Megaselia ciliata* (Zetterstedt, 1848)

=*M. confulgens* Borgmeier, 1964. ♀. Misidentification

Robinson (1981) synonymised *M. confulgens* Borgmeier with *M. aequalis* (Wood), along with *M. nasoni* (Malloch). However, *M. aequalis* and *M. nasoni* are distinct species. The former has a normal fourth abdominal tergite in the female, whereas this tergite is abbreviated in the females of *M. aequalis* (as in *M. ciliata*). In both sexes these two species can be separated by leg colour. In *M. aequalis* both the middle and hind legs are entirely dark brown. In *M. nasoni* the middle legs are yellow brown. The larval habits also differ. Those of *M. aequalis* feed on slug eggs (Robinson and Foote, 1968) and those of *M. nasoni* on spider eggs (Disney and Evans, 1980). I formally resuce *M. nasoni* from synonymy.

Borgmeier's (1964) description of *M. confulgens* "Beyer in litt" was based on the examination of a single female paratype, whose description (despite supposed differences in haltere colour and degree of shine on the frons) lies well within the range of variation for *M. ciliata*. The male of *M. confulgens* (whose description by Borgmeier was based on "Beyer in litt") is, in my opinion, correctly synonymised with *M. aequalis* by Robinson (1981).

*Field Studies Council Research Fellow, Department of Zoology, University of Cambridge, Cambridge, CB2 3EJ.

*Megaselia devia* Schmitz, 1936

I have three males of this species from England. Two were collected by Mr. G. Forrester from a copse in the New Forest (Grid ref. 41/399009) 26 June – 3 July 1984. I collected a single specimen in my garden in Cambridge (Grid ref. 52/451602) 13-14 September 1984. The species is previously known from Holland and Spain.

The male of *M. devia* resembles *M. discreta* (Wood), *M. halterata* (Wood), *M. subfuscipes* Schmitz and *M. hirtcaudata* (Wood) in having bristles on the epandrium. It is immediately distinguished by its vestigial posterior processes of the hypandrium.

*Megaselia limburgensis* (Schmitz, 1918)

Robinson (1981) synonymised this species with *M. fungivora* (Wood) on the basis of the specimens attributed to *M. limburgensis* by Borgmeier (1964), However I have specimens of *M. limburgensis* from Poland and England which agree with Schmitz's description and are clearly a different species from *M. fungivora.* Borgmeier's description of *M. limburgensis* lies within the range of variation of *M. fungivora.* Robinson (1981) correctly recognised that the specimens examined by Borgmeier were in fact *M. fungivora*, but he incorrectly proposed a synonymy rather than a misidentification. In view of this I formally rescue *M. limburgensis* from synonymy and recognise it as a valid species.

## Acknowledgements

I am grateful to Dr. H. Ulrich for the loan of specimens of *M. brevior* from the Schmitz Collection (Zoologische Forschungsinstitut und Museum Alexander Koenig, Bonn).

## References

Borgmeier, T., 1964. Revision of the North American Phorid flies. Part II. *Studia Ent.* **7**: 257-416.

Disney, R. H. L., 1985. Records of scuttle flies (Diptera Phoridae) from Flatford Mill, including two species new to Britain. *Trans. Suffolk Nat. Soc.* **21**: 13-17.

Disney, R. H. L. and Evans, R. E., 1980. Phoridae (Diptera) whose larve feed on eggs of spiders (Araneida). *Entomologist's mon. Mag.* **115**: 21-22.

Robinson, W. H., 1981. Terminalia of North American species of Group II *Megaselia* (*Aphiochaeta*), and descriptions of four new species (Diptera: Phoridae). *Proc. entomol. Soc. Wash.* **83**: 489-504.

Robinson, W. H. and Foote, B. A., 1968. Biology and immature stages of *Megaselia aequalis*, a phorid predator of slug eggs. *Ann. entomol. Soc. Am.* **61**: 1587-1594.

# THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1986

By R. F. BRETHERTON* and J. M. CHALMERS-HUNT**

(concluded from page 194)

## ANNEXE II

### Records of scarcer immigrant species in 1986

Suspected immigrants of resident species are marked *. Unless otherwise indicated single examples are referred to. Dates for nocturnal species are for the beginning of the night as far as possible, and are of insects seen in traps or otherwise at light in the field. Names of direct records are abbreviated to their initials; names of indirect recorders appear in full.

***Evergestis extimalis** Scop. (2). NORFOLK v.c.27. Scratby, mid July; Winterton-on-sea, mid July (KS, Norfolk moth survey). Probably immigrants.
***Sitochroa palealis** D. & S. (5). DORSET, St. Alban's Head, 10.8, two (PAD). HANTS. v.c.12. Winchester (DHS), for 3rd successive year. SUSSEX v.c.14. Peacehaven, 27.2 (CRP). KENT v.c.16. East Malling, 16.7 (D. A. Chambers *Ent. Rec.* **98**:257).
***Ostrinia nubilalis** Hubn. (c.50). DEVON v.c.3. Axminster, several, believed to be resident nearby (ECP-C). NORFOLK v.c.27, late June/July, several (KS). SUSSEX v.c.14, Peacehaven 26/27.6 (5); 13.7 (2); 14.7 (3); 12.7 (6); 21 and 22.7 – 22 in all (CRP). Some or all possible immigrant: coincidence of dates with other immigrants.
**Papilio machaon** L. (2). KENT v.c.15. Whiteness Point, Broadstairs, 21.9, closely watched and identified, then flew towards Margate (S. Mount). SURREY. Peaslake, 29.9, caught by Mrs. Sherlock and examined by Maj. Gen. H. Bainbridge, (*pers comm*).
**Colias hyale** L. or **C. australis** Verity. (1). HANTS. v.c.11. New Forest, 2.7, one watched imbibing on a *Hieracium* blossom, then chased for some distance but not caught. The recorder is certain that it was not *C. croceus* f. *helice* but could not determine to which of the two other species it belonged (CJL).
**Vanessa antiopa** L. (2). GLOS. Shipston Moyne, 15.8, in garden (P. Hardie). ABERDEENSHIRE v.c.92. Cults, Aberdeen, 5.8, one seen (per MRY). We have also been reliably informed that an unstated number of adults of Canadian origin were released in a wood near Northampton c.6.8.86 (JHP).

*Folly Hill, Birtley Green, Bramley, Guildford, Surrey GU5 OLE.
**1 Hardcourts Close, West Wickham, Kent BR4 9LG.

**Melitaea didyma** Esp. (4-5). ESSEX v.c.18. Four or five examples were seen flying on 6.8 in a remote part of the Thames marshes by boys from a neighbouring school. Two were caught and were sent by the Biology master, C. H. S. Hodder, to the Nature Conservancy, Peterborough, where their identity was determined from a small, rather dark male; also locally by G. A. Pyman. It is improbable that they could have resulted from local rearing in captivity, of which none is known near the area. The numbers seen together in one place suggest that they may have been offspring of an earlier arrival which perhaps came off a ship passing nearby. The only previous record is of a specimen said to have been caught near Dumfries, south west Scotland, in 1886 (*Entomologist* **10**:25; Thompson *The Butterflies of Scotland,* pp. 164-165).

**Danaus plexippus** L. (1) CORNWALL v.c.1. Lemon Street, Truro, one seen flying on 17.9 (A. J. H. Trumble, per RDP). In the absence of other records for 1986, this must be regarded as a doubtful record or possibly an escape.

**Cyclophora puppillaria** Hubn. (1) SUSSEX v.c.13. Worthing, 14.10, female, from which eggs produced 52 pupae, the imagines from which emerged by 17.12, and were of several forms (SO).

**Rhodometra sacraria** L. (5). ISLE OF SCILLY St. Mary's, 3.9 (SN), 13.10 (MGWT). KENT v.c.15, Dymchurch, 26.8 (JAO); Hartlip, 11.10 (REL & CEL). MERIONETH Cors-y-Sarnau, Bala, 2.7 (HNM, BENHS exhibition).

**Orthonama obstipata** Fab. (9). CORNWALL v.c.2. Trebrownbridge, 10.5, male, 13.10 male (AS). DORSET Portland B.O., 11.10 (MR). HANTS. ISLE OF WIGHT v.c.10 Freshwater, 9.10 (BS). HANTS. v.c.11. Hayling Island, 8.10, male (JMW). SUSSEX v.c.13. Worthing, 2.10 (SO). Walberton, 13.7; 12.8 (J. Radford per CRP).

***Thera cupressata** Geyer (3 and larvae). GUERNSEY St. Peter's Port, July 10,11 (PDMC). It was first caught there on October 17 and 19, 1985 (PDMC and TNDP *Ent. Rec.* **98**: 217-218, figure). ALDERNEY October 1986, one at actinic light and two very small larvae from *Cupressus macrocarpa* were successfully reared. It can now probably be regarded as a resident in these islands, but as yet has not been found on the British mainland. It could easily be overlooked owing to its close resemblance to *T. juniperata* L.

**Semiothisa signaria** L. (4). KENT v.c.15. Orlestone Woods, 15.7, two worn males (JLF & MH). SUSSEX v.c.13 Worthing, 28.6 (SO *Ent. Rec.* **99**:133); Steyning 6.7 (MJE per BS). Previous records are Essex, 20.6.1970 and Orlestone Woods 31.7.1984.

***Chlorissa viridata** L. (1). KENT v.c.15 Orlestone Woods, 27.6 (C. Hart per BS). (See also *D. bankiana*).

***Eupithecia abietaria** Goeze (4). LINCOLNSHIRE v.c.54, Willoughby, 19.6 (REM Pilcher per BS). HANTS. v.c.12, Sparsholt, 27.6 (R.

Bell per BS). SUSSEX v.c.14. Beckley, 15.7 (M. Tweedie per BS). KENT v.c.16, Dartford, 21.7 (B.K.West per BS).

***Ennomos autumnaria** Wernb. (1). KENT v.c.15. Dungeness, 27.9 (JMC-H). Though fairly widespread in Kent and at times certainly resident, it has long been suspected of being also immigrant.

**Agrius convolvuli** L. (19 and 1 larva). ISLES OF SCILLY St. Mary's, 3.9; 7.9 (SN). CORNWALL v.c.1. Mawnan Smith, 13.10 (APF). DEVON v.c.3, Prawle Point, 9.9. (R. Andrew per VT). DORSET Portland B.O., 29.8 (MR). ESSEX v.c. 18. Bradwell-on-Sea, 27.8, male; 6.10 one larva (AJD). NORFOLK v.c.27 Winterton-on-Sea, 26.6 (KS). SUSSEX v.c.13. Walberton, 14.10 (J.Radford per CRP); Angmering, 15.10 (S.W.Gale per BS). SUSSEX v.c.14, Seaford, at rest (per CRP); Eastbourne, 29.8, at rest (N.Steer per CRP); Bexhill, late 9 & Golden Cross, 17.9 (Rushen per CRP). WARWICKS Rugby, 13.10, male (D.E. Porter per DCGB). CUMBRIA Beetham, 12.10 (JB). ABERDEEN. v.c.93. Old Meldrum, 18.8 (MRY). ARGYLL v.c.98. Balcardine, 7.10 (JCAC). INNER HEBRIDES. Isle of Canna, October (J. Cambell per P. Wormell). ORKNEY, 10.8 (RIL).

**Acherontia atropos** L. (2 and 1 pupa). SUSSEX v.c.14. Worthing, 17.8 (J. Remfrey per SO). WARWICKS, 2.9, pupa in potato field (I. Reid per DCGB). NORTH SEA. Forties Oil Field, one alive on oil rig (per MRY).

**Hyles livornica** Esp. (1). DEVON v.c.3. Axminster, 3.7 (ECP-C).

***Leucoma salicis** L. (43). CORNWALL v.c.2. Mawnan Smith, 27.6 (6); 28.6 (9); 29.6 (7), all males (APF). CORNWALL v.c.2. Trebrowbridge, 26.6; 27.6 (2) (AS); Bodelva, near Par, 24.6 (L. Gregory per AS); Seaton, 28.6 (AS). DORSET St. Alban's Head, 29.6 (PAD). BERKS. Aldermaston, 9.7 (PAD). SURREY. Compton Down, 7.7; Milford, 14.7 (DWB). GUERNSEY. St. Peter's port and two other localities, 19.6, two males; 26.6, c.ten females, 2.7, one female (PDMC, TNDP, RA). It is clear from the conjunction and dates that most, if not all of these were immigrants.

**Lymantria dispar** L. (1). HANTS. Portland B.O., 10.9, male (MR).

***Atolmis rubricollis** L. (5). CORNWALL v.c.1. Trebrownbridge, 29.8; Portwrinkle, 14.7 (AS). ESSEX v.c.18. Bradwell-on-Sea, 5.7, two females (SD); Colchester, 26.6 (B. Goody per BRS). Possibly immigrants.

***Lithosia quadra** L. (7). CORNWALL v.c.1. Cadgwith, 1.10 (KGWE), where it may be resident. DEVON v.c.3. Axminster, 10.8, female (ECP-C). DORSET St. Alban's Head, 11.8 (PAD). KENT v.c.16. Faggs Wood, 24.7, 29.7. Both males. (BS). SUSSEX v.c. 13. Walberton, 30.7 (J. Radford per CRP). CUMBRIA. Beetham, 5.7 (JB). Possibly immigrants.

***Pelosia muscerda** Hufn. (1). ESSEX v.c.18, Bradwell-on-Sea, 31.7 (AJD). About 70 miles from nearest known colony.

**Agrotis crassa** Hubn. (1) SUSSEX v.c.14. Playden, 7.8 (MGWT). First confirmed record for mainland Britain. The only Irish record was in 1984, and it was caught again in 1986 (RA), where it is probably resident.

**Actinotia polyodon** C1. (1). ESSEX v.c.18. Bradwell-on-Sea, 17.6, male (AJD).

***Polia nebulosa** Hufn. (4). DORSET Portland B.O., 30.6; 2.7 (MR). ESSEX v.c.18. Bradwell-on-Sea, 4.7; 6.7, two (AGD, SD). Probably immigrant as essentially a woodland insect.

***Rhyacia simulans** Hufn. (1). SUSSEX v.c.14. Rye Harbour, 17.9 (MFWT).

**Mythimna albipuncta** D. & S. (21). ISLES OF SCILLY. St. Mary's, 3-11.9, six (SN); 13.10 (MWGT). DORSET Portland B.O., 17.9, 6.10; Swanage 10.10 (BRB). KENT v.c.15. Dungeness, 30.8, female (A. C. Gardner per DCGB), 4.10, female; 12.10. male (BS). HANTS v.c.11. Hayling Island, 2.9; 10.9 (JMW). SURREY Milford, 2.9 (DWB). SUSSEX v.c.14. Newhaven, 25.6; 2.7 (S. Curson per CRP); Peacehaven, 14.9; 22.9 (CRP). SUSSEX v.c.13. Walberton, 29.9 (J. Radford per CRP).

**Mythimna vitellina** Hubn. (c.11). ISLE OF SCILLY St. Mary's, 6.9; 10.9 (SN). CORNWALL v.c.1. Cadgwick, 20.9 (KWGE);Mawnan Smith, 12.10 (APF). DEVON v.c.3. Axminster, 2.6 (ECP-C). DORSET Portland B.O., 17.6; 4.10 (MR). HANTS. v.c.11. Swathling, 13.8 (MWGT). GUERNSEY 17.6; 12.10 (TNDP per RA).

**Mythimna loreyi** Dup. (1). HANTS. v.c.11. Hayling Island, 10.7, female, eggs infertile (JWM).

**Mythimna unipuncta** Haw. (16). ISLE OF SCILLY St. Mary's, 5.9; 6.9; 9.9 (SN). CORNWALL v.c.1. Mawnan Smith, 12.10 (APF). CORNWALL v.c.2. Trebrownbridge, 10.11 (AS). ISLE OF WIGHT Freshwater, no exact date (SAK-J).

***Leucochlaena oditis** Hufn. (2). CORNWALL v.c.1. Mawnan Smith, 13.10, male. CORNWALL v.c.2. Portwrinkle, 12.10 (AS). Possible immigrants, otherwise recent westward spread.

**Polyphaenis sericata** Esp. (1). GUERNSEY. Petit Bot Valley, 14.8. Previously known only from several specimens in the collection of W. A. Luff, caught at sugar in 1972 (pers comm and *Ent. Rec.* **99**:85-86). There are no known records from the mainland of Britain or Ireland, but it is widespread in France, where the larva feeds nocturnally on *Lonicera, Ligustrum* or *Cornus* sp.

**Trachea atriplicis** L. (4). ESSEX v.c.18. Bradwell-on-Sea, 6.7 (SD); Tillingham, 8.7, male (BS). KENT v.c.15. Dungeness, 8.8, 100 infertile eggs (DEW, *Ent. Rec.* **99**: 35). SUFFOLK v.c.25. St. Olave's, Yarmouth, 4.7, male (H. E. Jenner per BS; BENHS exhibition).

***Enargia paleacea** Esp. (1). KENT v.c.15. Dungeness, 10.8 (G.B. Senior per BS).

**Spodoptera exigua** Hubn. (8). ISLES OF SCILLY St. Mary's, 3.9;

5.9; 7.9; 9.9 (SN). DEVON v.c.3. Axminster, 2.7 (ECP-C). WARWICKS. Charlecote, 4.7 (DCGB). CUMBRIA Beetham, 23.9; 26.9 (JB).

***Heliothis viriplaca** Hufn. (1). HANTS. v.c.12. Winchester, 16.7 (DHS). Probably immigrant, as it is believed to be extinct in its former Hampshire localities.

**Heliothis peltigera** D. & S. (c.67 imagines, c.35 larvae). BERKS. Fernham, 28.9; 2.7; 4.7; 5.7 (SN). BERKS. Aldermaston, 10.7 (PAD). ISLES OF SCILLY St. Mary's, 4.9 (SN). CORNWALL v.c.1. Mawnan Smith, 27.7; 28.7, two; 29.9, two. All males (APF). CORNWALL v.c.2. Trebullet, 12.7; Portwrinkle, 12.10 (AS). DEVON v.c.3. Axminster, 29.6; 4.7 (ECP-C). DORSET St. Alban's Head, 29.6 (PAD); Portland, 28.6 (2); 13.7 (3), (DCGB); 5.7 (5), (G.B. Senior per BS). Portland B.O., 13.7; 26.9; 7.10 (MR); Holt Heath, 12.7 (Miss MB); Preston, 14.7 (MC); Swanage, 14.10, two (BRB); Lyme Regis, 23.8, one larva, (BRB). ESSEX v.c.18. East Ham, 2.7 (CWP); Bradwell-on-Sea, 8.7; 12.7; 2.10 (AJD, SD). ESSEX v.c.19. Saffron Walden, 9.10 (AME). HANTS. v.c.11. Hayling Island, 3.7, one very pale, 5.9, one very dark, possibly locally bred (JMW); Highcliffe, 15.7 (EHW). HANTS. v.c.12. Winchester, 6.7 (DHS); Sparsholt, 16.7 (R. Bell per BS). KENT v.c.15. Dungeness, 27.9; 4.10 (BS); 29.9, several (JMC-H, BENHS field meeting); Greatstone, 30.9 (S. Clancy per BS); Minster-in-Sheppy, 1.7 (GNB); Canterbury, no exact date (TWH). Larvae: Dungeness, 4.9, several (BS); 7.8, 12.8, several (MH); 12.10, sixteen (REL, CEL). KENT v.c.16. Dartford, 12.7 (BKW); Orpington, 6.8, male (PAS); Rainham, 5.10 (MH). SURREY Milford, 10.7 (DWB); Rushmoor, 10.7 (PAD); Wisley R.H.S., 29.8 (AJH). SUSSEX v.c.14. Newhaven, 9.7 (S. Curson per CRP); Rye, 15.7 (CRP); Haywards Heath, 15.9 (S. Pooles per CRP). Larvae: Eastbourne, 8.7, eight very small (MSP); Newhaven, 5.9, one (CRP). SUSSEX v.c.13. Walberton, 4.7 (J. Radford per CRP). WARWICKS. Bidford-on-Avon, 9.7 (R. Cox per DCGB); Marton nr. Rugby, 21.7 (R. Allen per DCGB). AYRSHIRE Newmilns, 14.7 (per EGH). GUERNSEY St. Peter Port, 19.6 (PD-MC), 29.6, three (RA).

**Lithacodia deceptoria** Scop. (1). NORFOLK v.c.27. Swanton Abbot, 16.6 (A. Wallis, teste G. M. Hagget, per KS, Norwich Moth Survey).

***Deltote bankiana** Fab. (10). ESSEX v.c.18. Bradwell-on-Sea, 29.6, two; 1.7; 2.7, two; 3.7 (AJD, SD). Tillingham, 9.7 (BS). ESSEX v.c.19. St. Osyth, 30.6 (R. Arthur per BS). KENT v.c.15. Ham Street Woods, 27.6 (Hart, *Ent. Rec.* **99**: 10). SUSSEX v.c.14. Playden, 2.7 (MFWT).

**Chrysodeixis chalcites** Esp. (1). KENT v.c.15. St. Margaret's Bay, 30.9 (J. R. Langmaid per AME).

**Chrysodeixis acuta** Walker. (2). KENT v.c.15. Sandwich Bay Ob-

servatory, 18.10 (TWH). SUFFOLK v.c.26. Bury St. Edmunds, 6.10 (RE).

**Diachrysia orichalcea** Fab. (1). SUSSEX v.c.13. Walberton, 2.9 (J. Radcliff per CRP).

**Trichoplusia ni** Hubn. (1). DORSET Swanage, 10.10 (BRB).

***Abrostola trigemina** Werneb. (1). HANTS. v.c.11. Hayling Island, 10.7 (JMW). Caught with *M. loreyi*, possibly immigrant.

**Catocala fraxini** L. (2). HANTS. v.c.10. Freshwater, Isle of Wight, 7.10 (Dr. C. Pope DHS). DORSET Langton Matravers, 9.9, female (E. W. Groves, *Ent. Gaz.* **38**: 58).

***Catocala sponsa** L. (4). DORSET Portland, 11.8 (R. A. Bell per BS). Weymouth, 11.8 (Parker, *Ent. Rec.* **99**:133). HANTS. v.c.11. Hayling Island, 19.8 (JMW). SUSSEX Worthing, 8.8 (Odell *Ent. Rec.* **99**: 132). A woodland species some distance from nearest known places of residence in the New Forest. Possibly immigrants.

SPHEGINA KIMAKOWICZI STROBL (DIPT.: SYRPHIDAE) IN W. KENT AND S. ESSEX. — I was pleased to sweep a male *Sphegina* on 25.vi.86 from a mass of hedge-parsley (its flowers, of course, long over) beside a path in the woods on Shooters Hill near here; it being the first of the genus to be found in the district, and only the second I had ever taken. I supposed it would prove to be the least uncommon of our three species, *clunipes* Fall., but reference to Collin (1937, *Ent. mon.Mag.* **73**: 182-5) showed it very clearly to be *S. kimakowiczi* Strobl, which at all events up to 1969 was not known from Kent at all, and even now I am aware of no definite record for the county. However, Stubbs & Falk (1983, *British Hoverflies:* 189) point out that in many districts it is quite as common [!] as *clunipes*. Further, it turns out that the *Sphegina* I had previously taken (Wake Valley, Epping Forest, 16.vii.69) was misidentified at the time as *clunipes* but is actually another male *kimakowiczi*, and I have yet to find the former species.

The sole characters given for the last-named in Stubbs & Falk (*op. cit.:* **94**, 189) are the clear yellow humeri and the slight one of abdominal shape. Should the humeral colour be a little darkened (at least hinted at in my examples) it becomes desirable to make use of other characters. These will be found in Collin's paper cited above and reproduced in Coe's handbook (1953:53), where are illustrated considerable differences in the third antennal segment and the face in profile, between the two species in question; whilst in the position of the outer crossvein, *kimakowiczi* agrees with *verecunda* Coll. and not with *clunipes*, as noted in Collin's key. — A. A ALLEN, 49 Montcalm Road, London SE7.

# DAMSELFLY EGGLAYING HABITS: *AGRION SPLENDENS* (HARRIS)

By CHARLES F. COWAN*

Males of many damselfly species participate in egglaying, either as the passive partners of tandem pairs; each standing erect gripping the neck of the submerging female with his anal claspers, legs folded in a "look, no hands" attitude and sometimes being dragged under the surface by his mate; or else waiting nearby until she has finished her work. Some books suggest that the former posture is "ready for a quick takeoff", but that I doubt. The threat would be aerial, by bird or dragonfly, or submarine by fish. Either way, the male would be incapable of sufficient acceleration for the pair to escape. More likely he is standing, first as a sentry to watch for any submarine danger and withdraw before emergency arises, or in an aerial attack to fall as sacrifice and allow his mate to carry on. Of some other species, however, it is said that the female "oviposits unattended by the male". One such is *Agrion splendens* (Harris), but I believe that this male is equally responsible.

Lessonhall is a small village in northwest Cumbria (NY 2250, sheet 85) from which the River Waver runs northwest for about a mile in a deep cut between a byroad screened by a tall hedge and a farmtrack, before wending its way past Abbey Town to the Solway Firth. I was attracted to this cut in spring, 1960, when I happened on it, resplendent with wildflowers, notably *Cardamine pratensis* and *Hesperis matronalis* (white rocket), and alive with *Anthocharis* (orange tips). Revisiting it hurriedly on 25th June, I discovered a strong colony of *Agrion splendens* there, and settled down to photograph them. Unfortunately I was too late to see courtship, but I adopted a pair which soon selected a spot and uncoupled. The female stood on a floating stem, and submerged, and the male stood above her on the same stem. I snapped them in succession on the stem, and although one could still see the female submerged below the male, she does not show in the photo of him. Nearby pairs appeared to follow the same procedure. Eventually there were just the few males visible, the females all hidden below. Rudely, in the interest of science, I disturbed my male, who moved away about a foot. Again, more roughly, I threatened him. He obstinately flew to the nearest reed, still close to, and in full view of, the female. Time pressed; I watched for fifteen minutes, then had to go, leaving them in their respective positions. Nothing will convince me that those males were not "in attendance".

Egglaying procedure in Odonata seems to follow a more or less set pattern for each genus. The other British *Agrion* is *A. virgo* (L.),

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whose beautiful dark green males are such a familiar sight in favoured areas. How often are they to be seen sitting around on foliage overlooking a stream, apparently doing nothing? Are they not often, in fact, watching over their invisible mates? One forenoon in the New Forest I walked along a stream and saw them, perhaps five or six males to the mile. Returning in the evening, none were visible. Instead, I found neat little groups of the four severed wings, in the grass at regular intervals. Had those males each become meals for predators, diverting attention from their egglaying mates and sacrificed for the benefit of the species?

I have used the name *Agrion*, but notice that in the last 3 or 4 years that name has suddenly been dropped from the British List without explanation. *Agrion* Fabricius, 1775 (: 425) is far the most senior generic name in Zygoptera. Under it, Fabricius included just two species, *Libellula virgo* L. and *L. puella* L., both composites as indeed they were for Linnaeus. Its seniority ensures that it must be valid, and employed for the genus containing whichever of the two species was first validly designated its type species. As both species are British, so inevitably must be *Agrion.*

Alas, in about 1963 the Lessonhall section of the River Waver was "cleaned up". All the flora, including those in the river bed, were cleared; and June visits in 1965 and 1985 found no damselflies.

## Reference

Fabricius, J. C. 1775. *Systema Entomologiae* etc. [32] + 832 pp. Flensburgi et Lipsiae.

RHEUMAPTERA UNDULATA L. (LEP.: GEOMETRIDAE) IN. N. W. KENT. — Two females in very good condition were found in my garden m.v. trap on the night of July 14th, 1987. There are very few recordings for N. W. Kent, and these all in the second half of the last century, the most recent being in 1882 for the famous Birch Wood which was the southerly extension of the woodland in the immediate vicinity of my home (J. Chalmers-Hunt, *Butterflies and Moth of Kent,* 1981). Although the local woodland would seem to provide a suitable habitat, being on a clay soil and possessing numerous rides bordered by sallows, the nights of July 14th and 15th were marked by the capture of immigrant moths in widely scattered parts of Britain, and the meteorological conditions may have encouraged dispersal of some native species. I am inclined to believe that these specimens were not of local origin. — B. K. WEST, 36 Briar Road, Dartford, Kent.

# NOTES ON THE BIOLOGY OF *ATHRIPS RANCIDELLA* H.-S. (LEP.: GELECHIIDAE)

By P. A. SOKOLOFF* and J. M. CHALMERS-HUNT**

*Athrips rancidella* was first described by Herrich-Schaeffer (1854), and first taken in Britain on 7th July 1971, and repeatedly thereafter at light in a garden in West Wickham, Kent – the only known British locality. It was first recorded as new to the British fauna by Chalmers-Hunt (1985), who figured the moth together with the male and female genitalia.

A search for the larva of *rancidella* was made in 1986 and 1987. In May 1987, a heavy infestation was noticed on a specimen of *Cotoneaster horizontalis* in a garden at West Wickham, Kent. Although it was obvious that more than one species of lepidopteron was present, a small, dark gelechiid larva predominated. A number of these were isolated for confirmatory breeding. Final instar larvae were described on 20th June:

Head black; prothoracic plate black with anterior aspect brown; abdomen variable from dark reddish-brown to sooty black; tubercles paler, with a dark central spot, although this feature is poorly differentiated in darker specimens. Very active, living in conspicuous, off-white webbing forming an untidy tube along a twig; loose webbing may extend over leaves, and join adjacent twigs. The larva eats the undersurface of a leaf, leaving a transparent film of leaf tissue which turns slightly brown and withers, disfiguring the appearance of the bush. Pupation occurs in a dense, white cocoon in the larval habitation, usually along a twig.

Moths emerged over the period 25th June to 16th July. They exhibited typical gelechiid behaviour, being active when disturbed, running rapidly around, taking flight, or hurling themselves into dark recesses. It has not been established if the moth overwinters as an adult, egg or larva. Captive moths sleeved on foodplant died after about a week, showing no signs of seeking a resting place, and it may reasonably be assumed that the overwintering stage is the egg or as a small larva.

From a comparatively small sample of infested *Cotoneaster*, many tens of moths emerged, with no obvious parasites noted. Small numbers of other species were also bred, these being *Scythropia crataegella* L., *Ancylis achatana* D. & S. and three species not previously recorded from *Cotoneaster*, namely *Clepsis consimilana* Hb., *Acleris variegana* D. & S. and *Teleiodes vulgella* Hb.

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** 1 Hardcourts Close, West Wickham, Kent.

**References**

Chalmers-Hunt, J. M., (1985) *Monochroa niphognatha* Goz. and *Athrips rancidella* H.-S. (Lep.: Gelechiidae) new to the British fauna. *Entomologist's Rec. J. Var.* **97**: 20-24.

Herrich-Schaeffer, G. A. W. (1843-56) *Systematische Bearbeitung der Schmetterling von Europa* **5**: 176.

LACON AT LARGE. – On a visit to Windsor Great Park on 16.5.87, I found myself by chance near the site at which *Cicones undatus* Guer. was first noted in Britain (*Ent. Rec.* **99**: 93) and took the opportunity to check on its fortunes. I found it sparingly on three dead sycamore trees and was somewhat surprised to find with it on the third tree a specimen of *C. variegata* (Hellwig), a beetle usually found on beech trees. I was even more surprised to find, on the same tree under a small flake of bark, a live female *Lacon querceus* Herbst.

This is a beetle which has been found by a number of coleopterists at Windsor since it was rediscovered there by my friend Mr. A. A. Allen in 1937 after a lapse of more than a hundred years but, as far as I can determine, it has been found exclusively where it has bred in red rotten oak in standing or fallen trees or in fairly large fallen boughs. Indeed, Mr. Allen, who has probably come across it at Windsor more frequently than anyone else, was led to state (1966, *Ent. Rec.* **78**: 14) ". . . probably nocturnal, as it is never found at large." It is perhaps debatable whether a beetle hiding under a small flake of sycamore bark was truly "at large" but at least it was not in its usual habitat.

From my own limited observations it appears that once a bough containing a breeding colony of *Lacon* becomes detached from its tree and falls to the ground, the colony does not thrive for long, for reasons yet to be determined. Perhaps this is the time, possibly the only time, when adults disperse to found new colonies. My friend Mr. H. Mendel has told me that he with others found a number of *Lacon* adults in a large piece of fallen oak in Windsor Great Park about six weeks prior to my visit and it could be relevant that this was only a few 100 m from where I found the specimen under sycamore bark, presumably hiding temporarily while she sought an appropriate breeding site.

I thank Mr. A. R. Wiseman (Deputy Ranger, Crown Estates) for permission to study beetles at Windsor and Mrs. S. Garnett, Nature Conservancy Council for arranging the permit. – J. A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

# DESCRIPTION OF A NEW FORM OF *ADALIA BIPUNCTATA* WITH NOTES ON IT'S INHERITANCE

By M. E. N. MAJERUS, H. IRELAND and P. W. E. KEARNS*

The 2-spot ladybird, *Adalia bipunctata*, is extremely variable with respect to the patterns of the pronotum and elytra. The pronotum is white with varying amounts of black. In the most extreme forms it may be completely black. The elytra are most commonly red with two black spots, but a huge range of pattern variants occur. Mader (1926-1937) has described and named over one hundred forms ranging from all red to all black. We here describe a new mutation to be named form *purpurea*. It is an unusual form for it varies from previously described forms in its ground colour rather than in its pattern. The inheritance of *f. purpurea* is also outlined.

Our initial description for *f. purpurea* is of a one month old individual. The pronotum appears entirely black. The elytra are of a deep purple colour, rather darker at the base of the elytra and paling slightly to burgundy red posteriorly. The only marks present are the two black spots of the typical form which show through the ground-colour. Otherwise, the form is morphologically similar to the nominate form of the 2-spot; the legs are black as is the ventral surface of the abdomen.

Difficulty in describing f. *purpurea* arises because the rate of lay-down of the purple ground colour is slow and somewhat variable. When newly emerged, the adult is pale yellow, and the lay-down of pigment during the first 24 hours of adult life is the same as that of *f. typica*. The first indication of abnormality is to be seen on the pronotum. The central posterior white marks begin to darken, and then the lateral white patches also begin to appear to contain a dusting of grey. 48 hours after emergence, all the white areas on the pronotum appear mid-grey. Three days after emergence the first signs of abnormality appear in the elytra. They begin to look slightly dirty, so that the normally bright orange-red colour seems somewhat dull. This is particularly apparent basally and along the centre line of the elytra. When one week old, the insect has a completely black pronotum. At this stage the elytra are quite obviously darkening, the colour being best described as a dull russet red. Lay-down of the darker pigment appears to be more rapid at the anterior end of the elytra than posteriorly, so that the apices of the elytra are paler than the bases, throughout. The darkening continues over the next two to three weeks. As the colour becomes darker the change in colour appears to become slower. This may

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simply be an artefact of the pigmentation system, for it is likely that further pigment lay-down would be less obvious in dark individuals than pale ones. Once the form described above for a one month old individual is attained, there seems to be little further change.

F. *purpurea* first occured in an inbred stock, the parental stock being taken during the summer of 1983 in the grounds of Keele University in Staffordshire. A large mixed stock from Keele had been kept in a culture for ten generations. A single mating pair of typical 2-spots were isolated and these produced 127 progeny. All were typical. The progeny were allowed to mate and lay eggs to constitute a stock known as Y12. This stock was maintained for a further three generations. In this third generation a single f. *purpurea* was discovered. It was a female. She was separated from the rest of the Y12 stock, and proceeded to oviposit within 24 hours, indicating that she had already mated with a Y12 male. 31 progeny were reared from this female. All were typical. These progeny were maintained as a stock, and gave rise to 52 F2 progeny of which 12 were f.*purpurea*, the remaining 40 being typical. One male and one female of the f. *purpurea* progeny were isolated. These mated and produced 9 progeny, all f. *purpurea.* The remaining progeny in this F2 generation were split according to phenotype and maintained as separate stocks. The f. *purpurea* F2 stock has subsequently bred true, producing only f. *purpurea* progeny. The typical F2 stock has continued to segregate both typical and f. *purpurea* progeny, in approximately a five to one ratio. This is to be expected if about two thirds of the F2 typicals carry the f. *purpurea* gene.

The results are consistant with the hypothesis that f. *purpurea* is inherited as a single autosomal recessive gene. The Y12 male, which the original f. *purpurea* mated with before being isolated, must have been heterozygous for the *purpurea* allele. We suspect that the *purpurea* allele has arisen in the Y12 stock by mutation. It seems unlikely, given the history of the stock in which it was first found, that it could have already been present in the genome of one of the original Y12 parents.

We have had some difficulty maintaining stocks of f. *purpurea*, due to a certain degree of inbreeding depression. This has manifested itself in the increasing proportion of eggs from both the *purpurea* F2 and the typical F2 stocks which have been inviable. To alleviate this problem we have crossed our remaining f. *purpurea* to a new stock of f. *typica* from Keele. Pairings beween the progeny of these crosses produce 3:1 segregations of f. *typica* to f. *purpurea.* We intend to cross f. *purpurea* to other genetic forms of *A. bipunctata* such as f. *quadrimaculata* and f. *duodecempustulata* to see if the *purpurea* allele produces a change in the red areas of pattern in these other phenotypes.

**References**

Mader, L. (1926-1937) Evidenz der palaarktischen Coccinelliden und iher Abberationen, In Wort und Bild, I. *Epilachnini, Coccinellini, Synonychini,* XII + 412, 64 T., 15 fig. (1926-1934, Wein, Verein Naturbeobachter und Samml., 1935, *Ent. Anzeig.*, 15: 329-383, 1937, *Ent. Nachr.* Bl.: 384-412).

EARLY RECORDS OF EUPITHECIA TENUIATA HUBN. (SLENDER PUG) IN INVERNESS-SHIRE — Following my note on the occurrence of *E. tenuiata* in Inverness-shire (*Ent. Rec.* **98**: 125) I received a letter from Mr. M. Harper informing me that he found this species commonly at Newtonmore in 1954. It seems, therefore, that *tenuiata* has been present in Inverness-shire for many years and that our record of August 1985 was not the first for the county.

Thanks are extended to Mr. Harper for bringing these records to my attention. ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Herts., AL5 2JQ.

PSYCHE CASTA (PALLAS) (LEPIDOPTERA, PSYCHIDAE) – A PREDILECTION FOR GARAGE DOORS? — As a daily commuter I see a good deal of my garage door, a galvanized up-and-over door painted black but now after many years with algal deposits and other debris. Attached to it, also the concrete cross-member above and to a low overhanging wooden gable, can always be found about 30 or so cases of *Psyche casta.* I have not met with them on the main house, trees or fences in the garden, but one has appeared on a similar but new and shiny black door on another garage recently built and a search also yielded one on a low leaf of *Lamium album.* I cannot clearly remember if there were any cases on the wooden doors of the old garage which this new building replaced but I suspect there were. The garage doors face NW. and are shaded; the cases are by no means evenly distributed but mostly concentrated about 6-7 ft. above the ground but 7 were at about 3-4 ft.; all have the unattached end hanging downwards. According to the literature I have, the cases are often to be seen in large numbers on fences, posts, tree-trunks or even grass-stems (Ford, *Guide to the smaller British Lepidoptera.:* 41 (1949); Emmet, *Smaller moths of Essex;* 40 (1981); Hattenschwiler in Heath & Emmet, *Moths and Butterflies Gr. Brit. Ir.* 2: 144 (1985)). A hibernating specimen of *Limothrips cerealium* Haliday emerged from a case I detached in Dec. 1986 for study in an unsuccessful attempt to determine from exactly what it was composed. B. VERDCOURT, Spring Cottage, Kimbers Lane, Maidenhead, Berks., SL 6 2QP.

# THE SPREAD OF BLAIR'S SHOULDER-KNOT (*LITHOPHANE LEAUTIERI HESPERICA* BOUR). (LEP.: NOCTUIDAE)

By RORY HOWLETT and MICHAEL MAJERUS*

Since the first Cambridgeshire record of *Lithophane leautieri hesperica* Bour. (Blair's shoulder-knot) (Majerus,1985) we have taken this species at two other sites in the county. In reply to a request for records of this species we have also received reports from a variety of locations some of which are previously unpublished.

*L. leautieri* was first taken in Britain on the Isle of Wight in 1951 (Blair 1952). Since this time it has spread to mainland Britain, east and west along the south coast and subsequently northwards (Owen and Duthie, 1982),, so that within thirty years of its colonisation it had been noted from Cornwall in the west (Hart, 1980) to Suffolk in the east (Chipperfield, 1981), and as far north as Monmouthshire (Horton, 1980) and Leicestershire (Owen and Duthie, 1982).

The species flies from late September through October to November. It comes readily to light and appears to be increasing in abundance as well as in its range, so that along some parts of the south coast it is now one of the commonest autumn moths. Its usual food plant in Britain seems to be the Monterey cypress (*Cupressus macrocarpa*) although Skinner has recorded feral larvae on the hybrid *Cupressocyparis x leylandii*, and reports (Skinner 1984), the it will also accept this hybrid in captivity. We have circumstantial evidence to substantiate these reports because we have now taken two individuals in a Robinson m.v. trap situated next to a 100m long hedge of this hybrid, at the Department of Genetics Field Station, Cambridge (OS Ref. TL430600). The first, a female, was taken on 17 October 1985. This individual was abnormally dark compared with other examples we have taken in Ringwood, Hants. She was kept outside in a hanging cage with cut sprigs of *leylandii* on which she readily laid eggs. The eggs which appear fertile were laid singly on the foliage. The second was a normal male taken on 1 November 1985.

Previously, in addition to the specimen taken in 1983 at Bar Hill, Cambs (Majerus, 1985), a second male specimen was taken at Bar Hill (OS Ref. TL375634) on 16 October 1984. A male was also taken on 7 November 1984 at Over, Cambs. (OS Ref. TL368703). We thus conclude that the species is now fairly well established in Cambridge and the surrounding villages.

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Further to these records we have been informed of a number of others. A number have been taken at Cockpole Green, near Henley-on-Thames, Berks. (approx. OS Ref. SU798813). The first was a male, on 4 November 1982; another male on 1 November 1983; and a further 22 specimens (20 male, 2 female) between 2 and 16 October 1984 (Waite, pers. comm.). A single individual was taken at Oakham, Leics. on 7 November 1985 (Williams, pers. comm.). We have also been sent less precise details of records in Middlesex, Hertfordshire, Lincolnshire, Leicestershire and Suffolk, and wish to thank all those who replied to our previous enquiry in the *Record*. It is perhaps worth noting that a revised map showing the spread of *L. leautieri* since 1980 is being prepared by workers at Oxford Polytechnic at the moment (Owen, pers. comm.).

One final point that we are particularly interested in, is where *L. leautieri* naturally rests. Blair originally suggested the stone pinion as an English name for this species, and states that the species was "something like *Gratholitha ornitopus*, but not so white, it was of a more bluish grey, about the colour of the limestone of the North Wales coast, as though such rock were its accustomed background" (Blair, 1952). While studying this species in the Isle of Wight Kettlewell (1957) found a female on the trunk of a mature cypress sitting vertically at a height of about 8ft, where it closely resembled the bark. Despite an intensive search he was unable to find any further specimens but suggested that the species would normally rest high up. As we are researching into rest site selection in the Lepidoptera, we would be particularly interested to have details of specimens not taken at light. In any case we feel that entomologists should be encouraged to continue recording *L. leautieri* even though it is becoming quite commonplace in some areas, for it is rare that an opportunity to study the spread in distribution and abundance of a new species arises.

**References**

Blair, K. G. (1952). *Lithophane (Grapholitha) lapidea* Huebner (*Lep., Cardrinidae*) in the Isle of Wight, a new British Record. *Entomologist,* **85**, 123-4.

Chipperfield, H. E. (1981). Further spread of *Lithophane leautieri* Boisd. *Entomologist's Rec. J. Var.,* **93**, 42.

Hart, C. (1980). Blair's shoulder-knot in Cornwall. *Entomologist's Rec. J. Var.,* **92**, 119.

Horton, G. A. N. (1980). Monmouthshire Macrolepidoptera: some recent records *Entomologist's Rec. J. Var.,* **92**, 150-1.

Kettlewell, H. B. D. (1957). *Lithophane lapidea* Hubner (Lep. Noctuidae) breeding in Britain. *Entomologist,* **90**, 1-8.

Majerus, M. E. N. (1985). A note Blair's Shoulder-knot (*Lithophane*

*leautieri hesperica* Bour.) *Entomologist's Rec. J. Var.*, **97**, 30-31.

Owen, D. F. & Duthie, D. J. (1982). Britain's successful moth colonist: Blair's shoulder-knot (*Lithophane leautieri*, Noctuidae). *Biological Conservation*, **23**, 285-290.

Skinner, B. (1984). *Moths of the British Isles.* London, Viking.

———, (1984a). Feral foodplants of *Lithophane leautieri hesperica. Entomologist's Rec. J. Var.* **97**: 185-186.

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COURTSHIP BEHAVIOUR IN THE OIL BEETLE, MELOE PROSCARABAEUS L. — In April 1987 I collected a number of oil beetles from a South Wales locality for use in a BBC production. They were kept under observation for a few days, and the following may be of interest:

The antennae of the male have a curious "kink" about halfway along their length, in the form of a deeply concave notch. It has been suggested by Imms (1977 *General Textbook of Entomology* Vol. 1 p. 30) that the male antennae ". . . are used for holding the females. . .". The male beetle is some 5mm smaller than the female, and when the abdomens make contact during mating, the male is unable to reach the antennae of the female with his own.

The courtship of these fascinating beetles is a mixture of the brutish and the subtle. A male runs at, and scrambles on the back of any, and every, passing female. They rarely attempt to mount a male, suggesting a clear discriminatory power. Once on top of the female he sits with his head over hers, moving his head over her head and thorax whilst rapidly vibrating his palps. The male then bends his antenna at the notch, grips those of the female, and by lifting his head draws her antennae through his. This manoeuvre completed, the male slips down the female's back and attempts copulation.

Whilst the females observed were somewhat unresponsive, and there being no guarantee that they were virgin females, the behaviour of gripping and "caressing" antennae appears to be an intricate component of courtship. RUPERT D. G. BARRINGTON Old College Arms, Stour Row, Shaftesbury, Dorset SP7 0QF.

CHLOROCLYSTIS CHLOERATA MABILLE (THE SLOE PUG) (LEP.: GEOMETRIDAE) IN LEICESTERSHIRE — A single male of this species was caught in the Rothamsted Insect Survey light trap at Empingham (Site. No. 280, O.S. Grid Ref. SK 953 087) on the night of 17/18-vi-1987. Identification was confirmed by examination of the genitalia. So far as I am aware *chloerata* has not been recorded previously from Leicestershire. — ADRIAN M. RILEY, Entomology Department, Rothamsted Experimental Station, Harpenden, Herts., AL5 2JQ.

# MYRMECOPHILY IN LYCAENID BUTTERFLIES (LEPIDOPTERA : LYCAENIDAE)

By Stephen F. Henning*

(*Concluded from p. 222*)

The second species, *Lepidochrysops ignota* (Trimen) is a small brown butterfly with a greyish underside. Its distribution is limited to areas where its host plant *Becium obovatum* (Benth) N.E.Br . (Labiatae) and its host ants *Camponotus niveosetosus* Mayr occur together. It has a slow zigzag flight, sometimes rapid, near the ground. It often rests on the ground, or settles on the flowers to feed. *L. ignota* females were mainly observed to oviposit on flowers of *B. obovatum* continually visited by *C. niveosetosus* workers.

An *L. ignota* females would flutter around the flowers. She would alight briefly and pass her antennae over the buds and flowers, and if conditions were satisfactory would curve her abdomen around and lay a single egg. To establish whether it was the presence of the ants that induced the laying a similar experiment to the one carried out on *A. dentatis* was tried.

Twenty female *L. ignota* were captured. Ten were placed in a container with the foodplant *B. obovatum* alone and ten with foodplant plus host ants. The results were not as clear cut as in the case of *A. dentatis*, because *L. ignota* proved to be rather fragile. *A. dentatis* lived as long as three weeks in captivity, while not a single *L. ignota* female lived longer than five days. With *A. dentatis* some females took as long as a week to settle down before starting to lay.

Of the ten *L. ignota* females housed with foodplant alone not a single egg was laid. Out of the ten females housed with the foodplant and ants three of them laid eggs. It appeared that the presence of the ants plus foodplant may be necessary to induce the *L. ignota* female to lay.

The eggs take about six days to hatch. The first and second instars feed on the seeds (achenes) enclosed within the dry persistent calyx of the plant. The only indication that there is a larva within the calyx is the hatched egg on the outside. After the moult to the third instar, the larvae disappear from the *B. obovatum* inflorescences and become associated for the remainder of their annual cycle (some 10-11 months) with the host ants.

*Camponotus niveosetosus* is diurnal and, in the field, third instar *L. ignota* larvae are encountered during the day by foraging workers. During the course of the study five third instar *L. ignota* larvae were placed on *Becium obovatum* inflorescences seen to be

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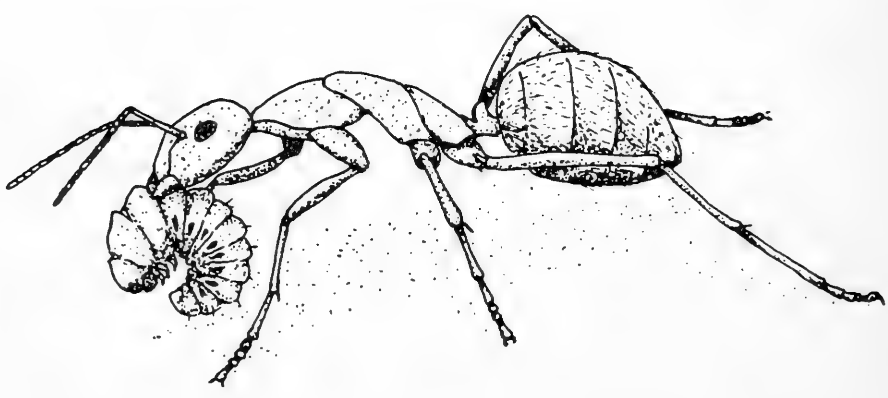
frequented by *C. niveosetosus* workers. It was observed that a foraging worker upon encountering one of the larvae on the inflorescences would touch and stroke it with its antennae usually in the vicinity of the honey-gland but also in the thoracic region. The ant would then proceed to make drumming movements (palpation) with its antennae in the vicinity of the honey-gland. The larva occasionally responded to this treatment by exuding liquid from the honey-gland which was consumed by the ant.

The third instar larvae used in these observations had already stopped feeding and had wandered off their foodplants. All five of these larvae were picked up and carried away by the ants. The larvae rolled themselves up when the ants attempted to pick them up by closing their mandibles between the last thoracic and first abdominal segments. This allowed the ants to carry the larvae with ease (Fig. 1). One worker carried a larva from the flower-head to its nest some 3 metres away. The other larvae were carried to nests within a 2 metre radius of the flowers.

In the nest the *L. ignota* larvae are deposited amongst the ant brood where they remain in the 'rolled up' position for some time. Later they crawl around between the brood of the ants. The larvae are at first investigated by some ants, but thereafter no more attention is paid to them than to the rest of the brood. While investigating the lycaenid larvae with their antennae the ants appear to concentrate on the thoracic and honey-gland areas. It has been suggested in the past that the ants pay more attention to the guests than to their own brood, but I was unable to confirm this from my own observations. The *L. ignota* larvae feed on ant larvae and pupae.

One example of what appeared to be trophallaxis was observed between an *L. ignota* larva and a worker ant. The larva raised its head so that its mouth-parts became visible. An ant was observed putting its mandibles on the mouth-parts for approximately thirty



*Camponotus niveosetosus* Mayr worker carrying a third instar *Lepidochrysops ignota* (Trimen) larva into its nest (after Henning, 1983a).

seconds, but whether there was actual exchange of liquid could not be determined. Claassens (1976) observed similar behaviour in *Lepidochrysops methymna* when brood was scarce in the nest.

*Lepidochrysops* larvae feed for the remainder of the summer on ant brood, but during winter when ant brood becomes scarce they undergo diapause. The larvae hang in a slightly contracted position from the roof of the nest where they spin a mat of silk to facilitate attachment of the prolegs. The ants cannot easily dislodge the larvae in this position. *Lepidochrysops* larvae start to feed again towards the end of winter when more ant brood becomes available, and *L. ignota* pupates some time in September or October. There is a peak in feeding activities of the larvae before pupation. The feeding and resting phase of *Lepidochrysops* larvae are intimately associated with ants, and appears to coincide with the main breeding seasons of the host ant.

*Lepidochrysops* larvae pupate in the tunnels of the ants nest. The adults, their wings still folded, run along the tunnels until they find the exit. The wings are expanded outside the nest.

*Poecilmitis lycegenes* (Trimen) is a bright orange butterfly with black spots and a pale brown underside. Its distribution is limited to areas where its host ant *Crematogaster liengmei* For. occurs. It feeds on several plants including the following: *Royena hirsuta* L., *Diospyros lycioides* Desf. (Ebenaceae); *Myrsine africana* L. (Myrsinaceae); and *Rhus* sp. (Anacardiaceae). The *C. liengmei* ants are often found tending coccids on these plants.

The female *P. lycegenes* appears to lay only where the *C. liengmei* ants occur, since the females have been observed to oviposit directly on the foodplant only when the ants were present. The females have also been observed to oviposit on stones and pieces of grass along the well established pheromone trails of the ants leading from their nests to the plants. One female was watched for two hours during which time she laid a number of eggs along the ants' pheromone trail. She laid on the ground, pieces of dead and living grass and stones all within 10mm of the trail. The ants generally followed the same path every day to and from the plants where they tended the coccids and the lycaenids. It appears that female *P. lycegenes* can detect the trail pheromone laid by the ants and oviposits near it, probably within the area of deviation by the ants.

The ants pick up the newly emerged *P. lycegenes* larvae and carry them to the plants, as other ant species have been recorded doing with homopterans. The young *P. lycegenes* larvae feed on either the upper or under surfaces of the leaves but, as they grow, they feed on the edge and later, starting from the tip, they eat the whole leaf. The young larvae shelter on the centre of a well concealed leaf. As the larvae get older they leave the plants during the day and shelter, usually several together and always attended by

ants, under nearby rocks. If the ants' nest is near enough they will shelter in it. The larvae find their way back to the plants by following the pheromone trails of the ants.

The honey-gland is present in the second and subsequent instars. The tubercles are present in all instars, developing from a simple elongated mole which can only be unfolded 'in and out' to a fleshy eversile projection bearing 8 spiculate setae. The larvae produce large quantities of liquid from the honey-gland upon which the ants feed. The ants are apparently necessary to keep the honey-gland clean because larvae kept in captivity without ants soon develop a fungal infection in the gland and die. An attempt was made to remove the excess fluid produced by the gland with a piece of blotting paper, but this procedure was usually unsuccessful.

Clark and Dickson (1971) record that the larvae pupate within leaf-shelters, but in a colony studied at Karkloof in Natal twelve pupae were found within the brood chamber of the ants nest, while only one was found on the host plant. The pupae are attached by their cremastral hooks and are dark brown to black in colour.

Although the above three examples give good overall picture of the type of ant/lycaenid associations to be found they are by no means the only ones.

For example, the larvae of *Euliphyra mirifica* Holland from West Africa live in the nests of the tailor ant *Oecophylla longinoda* (Latreille). From the observations made, it appears that *E. mirifica* larvae do not prey on the ant brood but are fed by the ant on regurgitated food. Pupation takes place within the ant nest.

Others, like the larvae of *Thestor dicksoni* Riley are entirely carnivorous on ant brood. The female *T. dicksoni* lays eggs on dry leaves and twigs and the newly hatched larvae are carried by their host ants, *Anoplolepis custodiens* Smith into their nests where they feed on the ant brood until they pupate. They pupate in the tunnels of the ant nest.

The larvae of *Thestor basutus* (Wallengren) are also entirely carnivorous, feeding on Jumping Plant Lice (Homoptera: Psyllidae) and ant brood. The eggs are laid singly or occasionally in small clusters on plants on which there are ants and Jumping Plant Lice. During the first to third instars the larvae live among the Jumping Plant Lice, upon which they feed, but on moulting into the fourth instar they enter the nest of their host ant *Anoplolepis custodiens* where they feed on ant brood. They pupate unattached in the ants nest.

The larvae of *Lachnocnema bibulus* (Fabricius) are also entirely carnivorous, preying on Leaf-hoppers (Homoptera: Jassidae). The eggs are usually laid singly just below colonies of adult and immature Leaf-hoppers. The newly emerged larvae make their way up the stem to where the Leaf-hoppers are congregated. In the early instars they

feed on Leaf-hopper eggs and small nymphs, but full grown *L. bibulus* larvae feed on both young and adult Leaf-hoppers. Clark and Dickson (1971) record that final instar larvae rear themselves up over a Leaf-hopper and suddenly pounce on it, or crawl up behind it and seize the wing tips. Ants (*Camponotus* sp.) are in constant attendance upon both Leaf-hoppers and the larvae. Ants have been observed to take what appears to be regurgitated liquid food from the mouth of *L. bibulus* larvae. They pupate on the leaves of the plant secured by the cremastral hooks and a silken girdle.

Larvae of other species are entirely phytophagous and although they are occasionally attended by ants are not dependent on them in any way. *Iolaus (Argiolaus) trimeni* Wallengren is a good example. The eggs are laid singly on the leaves of the parasitic plant *Tapinanthus rubrimarginatus* (Loranthaceae). The larvae at first feeds on the surface of a leaf, in troughs, filling the part eaten with its body, but as it grows bigger if feeds on the edge, wrapping the fleshy first segment round the edge of the leaf and completely covering its head. The final instar larva is black and grey-white and mimics a bird dropping. The larvae do not usually appear to be ant associated. The pupa is secured to a twig or the bark of the host-tree by the cremastral hooks only.

The larva of *Myrina silenus ficedula* Trimen is entirely phytophagous but is usually associated with ants but is not dependent on them. If feeds on several species of *Ficus* (Moraceae). The eggs are laid singly on a leaf or twig of the foodplant. The young larvae feed on the surface of a leaf, protected under a silken mat. The older larvae feed on the edge of the leaf, appearing to rely on their shape and coloration for protection. Young fruit are also occasionally burrowed into. The larvae are attended by various species of ant belonging to the genus *Camponotus*. The pupa is secured to a twig or to the bark of the tree, often among the tangled roots, by the cremastral hooks only.

The ants construct special structures on the plants to protect the larvae of certain species. *Poecilmitis brooksi* Riley shelters in small structures resembling miniature ants nests attached to the stem of its foodplant constructed by their host ant *Crematogaster peringueyi* Emery. *Spindasis namaqua* (Trimen) shelters in the soil at the base of its foodplant in 'brood chambers' constructed by their host ant *Crematogaster* sp.

## References

Claassens, A. J. M. 1976. Observations on the myrmecophilous relationships and the parasites of *Lepidochrysops methymna methymna* (Trimen) and *L. trimeni* (Bethune-Baker) (Lepidoptera: Lycaenidae). *J. ent. Soc. sth. Afr.* **39**: 279-289.

Classens, A. J. M. & Dickson, C. G. C. 1974. The early stages of

*Aloeides thyra* (L.) (Lep. Lycaenidae) with notes on Ant Association, Distribution and General Ecology of the species. *Entomologist's Rec. J. Var.* **86**: 253-258.

————, 1977. A study of the Myrmecophilous Behaviour of the Immature Stages of *Aloeides thyra* (L.) (Lep.: Lycaenidae) with Special Reference to the Function of the Retractile Tubercles and with Additional Notes on the General Biology of the Species. *Entomologist's Rec. J. Var.* **89**: 225-231.

Clark, G. C. 1940. On the life histories of South African Lepidoptera. *J.ent.Soc.sth.Afr.* **3**: 42-56.

Clark, G. C. & Dickson, C. G. C. 1956. The Honey Gland and Tubercles of the Lycaenidae. *Lepid. News* (U.S.A.) **10**(1-2): 225-231.

————, 1971. *Life Histories of the South African Lycaenid Butterflies.* Purnall, Cape Town.

Cottrell, C. B. 1965. A study of the *methymna*-group of the genus *Lepidochrysops* Hedicke (Lepidoptera: Lycaenidae). *Mem. ent. Soc.sth.Afr.* **9**: 1-110.

Henning, S. F. 1980. *Chemical communication between lycaenid larvae (Lepidoptera:Lycaenidae) and ants (Hymenoptera: Formicidae).* Unpublished M.Sc. dissertation, University of the Witwatersrand.

————, 1983a. Biological groups within the Lycaenidae (Lepidoptera). *J. ent. Soc. sth. Afr.* **46**(1): 65-85.

————, 1983b. Chemical communication between lycaenid larvae (Lepidoptera: Lycaenidae) and ants (Hymenoptera: Formicidae). *J. ent. Soc. sth. Afr.* **46**(2): 341-366.

———— 1984. The effect of ant association on lycaenid larval duration (Lepidoptera: Lycaenidae). *Entomologist's Rec. J. Var.* **96**: 99-102.

Hinton, H. E. 1951. Myrmecophilous Lycaenidae and other Lepidoptera — a summary. *Proc. South. Lond. Ent. Nat. Hist. Soc.* (1949-50), pp. 111-175.

Jackson, T. H. E. 1937. The early stages of some African Lycaenidae (Lepidoptera), with an account of the larval habits. *Trans. R. ent. Soc. Lond.* **86**(12): 201-238.

Larsen, T. B. & Pittaway, A. R. 1982. Notes on the Ecology, Biology and Taxonomy of *Apharitis acamas* (Klug) (Lepidoptera: Lycaenidae). *Entomologist's Gaz.* **33**: 163-168.

Malicky, H. 1969. Versuch einer Analyse der ökologischen Beziehungen zwischen Lycaeniden (Lepidoptera) und Formiciden (Hymenoptera). *Tijdschr. Ent.* **112** (8): 213-298.

———— 1970. New aspects on the association between lycaenid larvae (Lycaenidae) and ants (Formicidae, Hymenoptera). *J. Lepid. Soc.* **24**(3): 190-202.

Maschwitz, U., Wüst, M. & Schurian, K. 1975. Bläulingsraupen

als Zuckerlieferanten fur Ameisen. *Oecologia (Berl.)* **18**: 17-21.
Schroth, M. & Maschwitz, U. 1984. Zur Larvalbiologie und Wirtsfindung von *Maculinea teleius* (Lepidoptera: Lycaenidae), eines Parasiten von *Myrmica laevinodis* (Hymenoptera: Formicidae). *Entomol. Gener.* **9**(4): 225-230.
Wilson , E. O. 1971. *The Insect Societies.* The Belknap Press of Harvard University Press, Cambridge, Messechusetts.

ENARGIA PALEACEA ESP. (LEP.: NOCTUIDAE) IN KENT. — This species has been noted in Kent on some half dozen occasions, but not in N. W. Kent for over a century. An exceptionally fine male was attracted to my garden m.v. light on the night of July 15th 1987, apparently a time of immigrant activity over Britain, although curiously, *Phlogophora meticulosa* L. was the only other probable immigrant noted that night. B. K. WEST, 36 Briar Road, Dartford, Kent.

MELANGYNA GUTTATA FALL. (DIPT.: SYRPHIDAE), ETC., AT CHARLTON, S. E. LONDON. — On 23.vi.83 I took an example (♀) of this delicate hoverfly, an uncommon species, from a goutweed umbel at the spot briefly described in 1983, *Ent. Rec.* **95**: 85, and have recently caught another (also ♀) flying about, and feeding from, a clump of hogweed in flower in a different part of Charlton, at the overgrown edge of a sportsground. Earlier, I had taken it singly on two occasions in my former garden at Blackheath (Chandler, 1969, *Hoverflies of Kent:* 164), and once in Windsor Forest (1982, *Ent. Rec.* **94**:230) — again on umbels in both places. My experience might appear to suggest a possible specific connection with Umbelliferae such as certainly exists in the case of the far commoner *M. labiatarum* Verr.

The interesting little spot in Maryon-Wilson Park already referred to remained so, unfortunately, for only another year or two, its deterioration being due in part to increased shading by overhanging trees and in part to the smothering of the goutweed flowers by rampant nettles. Numerous buttercups around seem very unproductive of hoverflies other than the odd *Cheilosia albitarsis* Mg. I did, however, manage to net off an umbel a ♂ *C. scutellata* Fall. (3.vii.83, a very warm day); whilst the 'hitherto unrecognized [male] *Cheilosia*' mentioned at the end of my note cited above was kindly determined for me by Mr. A. E. Stubbs as that provisionally noted in his book as 'species E'. This, I understand, has since been referred to *C. proxima* Zett., a species I have seen very little of and never befor in S. E. London or Kent (despite the records in Chandler, *l.c.* 180). The Charlton specimen was among buttercups. — A. A. ALLEN, 49 Montcalm Road, London, SE7.

# LEPIDOPTERA RECORDED FROM THE ISLES OF SCILLY IN MAY 1986

By R. J. HECKFORD*

In 1981 Agassiz published a list of the Lepidoptera of the Isles of Scilly. I do not know of any later published records. Between 24th and 31st May 1986 I stayed on St. Mary's, Isles of Scilly and during that time visited St. Martin's and St. Agnes. I found two species not included in Agassiz's list as well as several of which there are few records from the islands. I list these at the end of this paper. The comments in brackets are taken from Agassiz's list. My observations of two other species seem sufficiently interesting to warrant a fuller account.

*Oinophila v-flava* (Haworth) occurs in the open in the Isles of Scilly, although elsewhere in the British Isles it seems confined to cellars and warehouses where the larva has been found on the fungus *Rhacodium cellare* and on wine corks. The larva had never been found on the islands (Pelham-Clinton, 1985). On 24th and 25th May at Old Town Bay, St. Mary's I found several larvae which I could not identify under the bark of *Pittosporum crassifolium* Soland. Much to my surprise between 16th June and 3rd July these produced *v-flava*.

*P. crassifolium* is a native of New Zealand and has been widely planted on the islands as a windbreak. I found most of the larvae under bark which was paper thin and detached from the trunk. The bark could be easily peeled back to reveal the larvae which appeared to feed on both the bark and trunk amongst a few silken strands. Such detached bark occurred on apparently healthy trees in the area below where a branch joined the trunk. I also found a few larvae under much thicker bark which had cracked.

The larvae were comparatively long and thin and quite active when disturbed. They all had a light reddish-brown head with a paler prothoracic plate, but the bodies differed. Some were almost transparent and glass-like with the gut showing dark grey; others were opaque white with no sign of the gut. The pinacula were concolorous with the body.

On 26th May I watched a female *Celastrina argiolus* (Linnaeus) lay one egg on a bud of *Hebe lewisii* (Armstrong) in the grounds of Tregarthen's Hotel, St. Mary's. There were several females crawling over and examining other buds but I did not see any more eggs laid. I did not take the egg to confirm that the larva would eat either the flowers or leaves but in the circumstances it seems likely that this is a foodplant on the islands especially as it is frequently planted there.

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## List of selected species

### TISCHERIIDAE

*Tischeria marginea* (Haworth) Rocky Hill, St. Mary's, mine on Rubus 25.v. ("Tresco").

### TINEIDAE

*Infurcitinea argentimaculella* (Stainton) near Tregarthen's Hotel, St. Mary's, one larva in a tube on *Lepraria* 24.v.; near Toll's Porth, St. Mary's several larvae in tubes on *Lepraria* 25.v., adult bred 10.vii. ("Twice recorded on Tresco").

### GRACILLARIIDAE

*Calybites phasianipennella* (Hübner) St. Agnes, one larval cone on *Rumex acetosa* 28.v. ("Several cones recorded on Tresco").

### GLYPHIPTERIGIDAE

*Glyphipterix simpliciella* (Stephens) Porth Hellick, St. Mary's, several adults 25.v.; Telegraph Hill, St. Mary's common 26.v.; St. Agnes, common 28.v.; St. Martin's, several 29.v. ("Uncommon").

### COLEOPHORIDAE

*Coleophora coracipennella* (Hübner)/ *prunifoliae* Doets/*cerasivorella* Packard. Pelistry Bay, St. Mary's, one case on *Crataegus* 27.v. no moth bred. Most likely to be *cerasivorella*. Agassiz records only *coracipennella* with no twentieth century records.

*C. discordella* Zeller near Porth Cressa, St. Mary's, several cases on *Lotus corniculatus* 24.v.; near Toll's Porth, St. Mary's, a few cases on *L. corniculatus* 25.v.; St. Agnes, several cases on *L. uliginosus* 28.v.; St. Martin's, a few cases on *L. corniculatus* 29.v. ("Uncommon").

### GELECHIIDAE

*Chrysoesthia sexguttella* (Thunberg) Bar Point, St. Mary's, one adult 26.v. ("F. Jenkinson only, no twentieth century records").

*Mirificarma mulinella* (Zeller) Telegraph Hill, St. Mary's, larvae on *Sarothamnus* 26.v., adults bred 24.viii. and 6.ix.; St. Martin's larva in *Ulex* flower 29.v., adult bred 25.viii. Not previously recorded from the islands.

*Scrobipalpa samadensis* (Pfaff) subsp. *plantaginella* (Stainton) St. Agnes, a few larvae in roots of *Plantago coronopus* 28.v.; St. Martin's several larvae 29.v.; Porthcressa, St. Mary's several larvae 30.v. – I had found larvae on St. Mary's on 22.iii.1977 but had not published that record. ("One, September 1957").

*S. ocellatella* (Boyd) St. Agnes, two larvae mining *Beta maritima* 28.v.; St. Martin's several larvae 29.v. ("Not common").

*Caryocolum viscariella* (Stainton) near Porthloo Beach, St. Mary's three larvae in spun terminal shoots of *Silene dioica* 25.v.; Telegraph Hill, St. Mary's, several larvae 26.v.; St. Martin's several larvae 29.v. There are no previous published records, but both D. J. Agassiz and E. C. Pelham-Clinton tell me they have found the species here previously.

TORTRICIDAE

*Acleris rhombana* (Denis and Schiffermuller) Pelistry Bay, St. Mary's one larva on *Crataegu* 27.v., adult bred 10.ix. ("One, Tresco 19.ix. 74").

**Acknowledgement**

I am grateful to Rev. D. J. L. Agassiz for comments on this paper.

**References**

Agassiz, D. J. L., 1981. *A revised list of the Lepidoptera (moths and butterflies) of the Isles of Scilly*, 20pp., 1 map. Isles of Scilly Museum Association [Publication No. 14].

Pelham-Clinton, E. C., 1985. Hieroxestidae *in* Heath, J. & Emmet, A. M., *The moths and butterflies of Great Britain and Ireland* 2: 240-243.

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TRISTALES EMORTUALIS (D. & S.) (LEP.: NOCTUIDAE) IN THE GARDEN. With an overnight temperature of 16°C. promised for the night of 6th July, 1987 the garden trap was put on for the first time this year. At around midnight I gave it a cursory look before turning in and, noting plenty of activity, decided to leave a real examination until the next morning. A moth on the outside of the container looked remarkably like something I had experienced years ago in the not far distant Chilterns but it was not looked at with much conviction. The specimen was still there on the outside next morning and was indeed a female *T. emortualis*. Whether this specimen was an immigrant only the substantive records of others running traps on that night will indicate. Either way, this Caversham specimen could well be a new county record for v.c.23 Oxfordshire; all records known to me over the past 25 years relate to v.c.24 Buckinghamshire and those old 1859 and 1910 records are too imprecise to be sure how far the good Revs. Burkes and Perry walked on their excursions around Stonor – the county boundary does funny things in those parts! B. R. BAKER, 25 Matlock Road, Caversham, Reading.

# *HELIOTHIS PELTIGERA* (D. & S.) THE BORDERED STRAW (LEP.: NOCTUIDAE) AS AN OCCASIONAL SCOTTISH IMMIGRANT

By E. G. HANCOCK*

The capture of a single example of the bordered straw moth, *Heliothis peltigera* (D. & S.), in a light trap set at Newmilns, Ayrshire (NGR: NS 5337) on the 14th July 1986, has prompted the examination of previous records in Scotland. They are here treated in date order, according to when they were captured.

The first reference appears to be that of Meyrick (1895) in which he refers to the occurrence of this species as far north as Ayrshire. This record is given more substance in the British Association Glasgow Handbook (Dalgish & Ord, 1901) as at Monkton, Ayrshire, no date given. It is credited to the naturalist J. P. Duncan who was active around the Clyde coast at this time although biographical details have proved elusive. He is probably the same Mr. Duncan of Troon who contributed to the Flora of Ayrshire (Smith, 1896). No specimens of his have been traced to-date in museum collections. This locality has been perpetuated by South (1909), as well as in later editions, under the name of Markton, Ayrshire. Such a place does not exist and is clearly an error in transcription for Monkton.

The second occurrence of *peltigera* in Scotland is on the Isle of Rhum. To precis Harrison (1945) it was found as a fully grown larva on wormwood (*Artemesia absinthium*) being cultivated by a shepherd in tin cans outside his cottage at Kilmory on 19th August 1945. Harrison had beaten this plant in anticipation of finding the homopteron associated with *Artemesia* spp., *Eupteryx abrotani* Douglas. What the shepherd thought of this behaviour is not recorded but this finding of *peltigera* has been requoted in the entomological press at frequent intervals.It appears in Dannreuther (1946, 1949a), Harrison (1955), Steel and Woodroffe (1961) and Wormell (1982, 1983). Harrison in his later assessment refers to the event as the plural "larvae". Dannreuther (1949a) in reviewing this species' status during the period 1945-8 mentions a total of over a hundred adults and hundreds of larvae for the year 1945. By contrast, in 1948 there were only three adults seen in the whole British Isles from Somerset, Torquay and Unst. This last locality is further specified as at Westing, on the west side of the island in Shetland, collected by Mrs. M. C. Sutherland (Dannreuther, 1949b).

In 1957 two *H. peltigera* were seen in Scotland, both of which are represented by specimens in museum collections. On 12th March 1957 Alan MacLaurin collected one at Bridge of Weir, Renfrewshire, which specimen is now in Paisley Museum. This record

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does not appear to have been noticed in any published form. The second is in the Royal Museum of Scotland and is that cited by French (1958). It is from Gargunnock, Stirlingshire and was found indoors on flowers by Miss W. Stirling on 19/20th March 1957. These two records show the penetration of an early spring migration into central Scotland but there is no evidence of successful breeding resulting from this particular influx as far north. Apart from the larva(e) found in 1945 only odd adults have been recorded. It seems exceptional for this species to develop a Scottish bred generation in the wild. That this is a rare event compared with the south of England is a not totally unexpected conclusion.

**Acknowledgements**

F. R. Woodward operated the light trap from his garden in Newmilns, Ayshire and Dr. M. R. Shaw sent information from the Scottish Insects Record Index held at the Royal Museum of Scotland, Edinburgh.

**References**

Dalglish, A. A. & Ord, G. W. (1901) Lepidoptera in *Handbook On the Natural History of Glasgow and the West of Scotland,* British Association for the Advancement of Science; 229.

Dannreuther, T. (1946) Migration Records, 1945 *Entomologist,* **79**: 108.

Dannreuther, T. (1949a) Records of Heliothinae (Lep.) observed in the British Isles during 1945-8 *J. Soc. Brit. Ent.* **3**: 53-4.

Dannreuther, T. (1949b) Migration Records, 1948 *Entomologist,* **82**; 107.

French, R. A. (1958) Migration Records, 1957 *Entomologist,* **91**: 107.

Harrison, J. W. H. (1945) *Heliothis peltigera* Schiff. An immigrant on the Isle of Rhum. *Entomologist,* **78**: 191.

Harrison, J. W. H. (1955) The Lepidoptera of the lesser Skye Isles. *Ent. Record,* **67**: 169-177.

Meyrick, E. (1895) *A Handbook of British Lepidoptera.*

Smith, J. (1896) *The Flora of Ayrshire.*

South, R. (1909) *Moths of the British Isles,* **1**: 320.

Steele, W. O. & Woodroffe, G. E. (1969) The Entomology of the Isle of Rhum, National Nature Reserve. *Trans. Soc. Brit. Ent.,* **10**: 91-167.

Wormell, P. (1982) Entomology of the Isle of Rhum. *Biol. J. Linn. Soc., Lond,* **18**: 348.

Wormell, P. (1983) Lepidoptera in the Inner Hebrides. *Proc. R. Soc. Edinburgh,* **83B**; 546.

# ON THE OCCURRENCE OF *TRIPLAX LACORDAIRII* CROTCH (COL.: EROTYLIDAE) OUTSIDE KENT

By D. A. PRANCE B.Sc., F.R.E.S.*

Until relatively recently the only authenticated localities for this rare species were a handful of places in Kent, the most notable being Darenth Wood in the western division. In 1963, however, Skidmore published the capture of a single specimen near Matley Passage in the New Forest — evidently the first from this area. Shortly afterwards Allen (1965) explained how P. Harwood had found it perhaps 40 or 50 years previously near Crichel and Witchampton in Dorset and further elucidated that G. H. Ashe encountered it at Hartlebury in Worcestershire. Thus the known range of *Triplax lacordairii* was considerably increased.

In recent correspondence, Mr. Peter Hodge informed me of a specimen of *lacordairii* he took in 1980 at Denny Wood, New Forest. This reminded me that I have seen a specimen in the British Museum (Natural History) which was collected by R. D. Pope from the same wood in 1975. Other recent captures from the Forest (Jones, 1986), including one from Brockenhurst, clearly show an established colony in the area. Furthermore there is now a recent record from the Isle of Wight (McClenaghan, 1985). Whether or not it will be rediscovered in Dorset and in particular Worcestershire remains to be seen. Certainly any Kent records since that of E. G. Philp at Blean Woods in 1965 (Anon., 1966) would be worthy of note.

## Acknowledgements

I am grateful to the Trustees of the British Museum (Natural History) for permission to study material therein, and to Mr. Hodge for the above and other records.

## References

Allen, A. A., 1965, *Triplax lacordairei* Crotch (Col., Erotylidae) in Dorest and Worcs., with brief remarks on the other British species. *Entomologist's mon. Mag.*, **101**: 46-47.

Anon., 1966, Blean Woods, Kent — 13 June 1965 (field meeting). *Proc S. Lond. ent. nat. Hist. Soc.* for 1965: 87-88.

Jones, R.A., 1986, Coleoptera (in 1985 Annual Exhibition). *Proc. Trans. Br. ent. nat. Hist. Soc.*, **19**: 49-54.

McClenaghan, I., 1985, Coleoptera (in 1984 Annual Exhibition). *Proc. Trans. Br. ent. nat. Hist. Soc.*, **18**: 2-6.

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Skidmore, P., 1963, *Triplax lacordairei* Crotch in the New Forest with notes on other British species of *Triplax* (Col., Erotylidae). *Entomologist's mon. Mag.*, **98** 1962): 271.

# Current Literature

**South African Lepidoptera – a series of cross-referenced indices** by **L. Vari** and **D. Kroon**. 198pp. Limp. The Lepidopterists Society of South Africa, 1986. Price US $ 22.50. (Available from Transvaal Museum Bookshop, PO Box 413, Pretoria 0001).

The lists that comprise this volume provide a comprehensive and taxonomically contemporary inventory of the moths so far known from Southern Africa, amounting to some 8300 species. The information is presented in four different lists: first, a systematic arrangement of superfamilies and families; second, an alphabetical list of species, with author, date and subfamily placement; third, an alphabetical list of genera, with included species listed alphabetically under each; and fourth, a semisystematic natural arrangement. A bibliography of authors is also included.

This is a very interesting way of presenting a checklist, that allows information to be accessed in a variety of ways. An essential reference work for those interested in all groups of South African Lepidoptera.

**Monitoring the abundance of butterflies 1976-1985** By **E. Pollard, M. L. Hall** and **T. J. Bibby**. Research & Survey in Nature Conservation No. 2 280pp. Limp. Published by the Nature Conservancy Council, 1986. Price £6.50.

This is an account of the first ten years of the Butterfly Monitoring Scheme, whose aim is to provide information at regional and national levels on changes in abundance of butterflies and to detect trends which may affect the status of butterflies.

The work considers the merits and validity of transect surveys, and provides a summary of changes in butterfly numbers over the survey period, analysis of population processes,effects of weather, phenology (seasonal changes in timing), migration and habitat change. The bulk of the text comprises raw data on monitoring, both species by species and site by site, concluding with recommendations and a brief bibliography.

Whilst not a book for general reading, the text is balanced and reasonable, and the wealth of raw data provides much food for thought. The NCC is providing a valuable service by publishing these research and review reports, and all at very reasonable prices.

# *APLOTA PALPELLA* (HAWORTH) (LEP.: OECOPHORIDAE) REDISCOVERED IN BRITAIN

By P. H. STERLING*

On 23 August 1986, I found a specimen of this obscure Oecophorid moth on an oak tree in Savernake Forest, Wiltshire. The specimen was dead, but in remarkably good condition, hanging from a single spider's thread. I am grateful for the determination of the species to Dr. J. R. Langmaid, who commented that to his knowledge there were no other sightings this century.

The species was last recorded (possibly the only record) in Wiltshire by Meyrick at Ramsbury, on 8th August, 1890 (Meyrick, 1890). He beat the specimen from an isolated elm tree and stated that Heinemann said that the adult rested on tree trunks, although subsequent search of that elm revealed no more specimens.

The larva and habits were described by Wood who discovered a colony of the species in Herefordshire (Wood, 1891). This population was breeding on the moss *Homalothecium sericeum* on an old sandstone wall. The larvae were living gregariously in silk galleries on the surface of the moss, killing it as they progressed. The dead patches of moss were then covered by lichenous growth. The silk galleries were white, but interwoven with moss fragments on the exposed surface. Small larvae were found as early as February, presumably having hibernated, but continued to feed well into late May and early June before pupating in a flimsy cocoon at the end of the gallery.

The mature larva was long and slender, greenish- or yellowish-white in colour, with a purple, irregular sub-dorsal line and a paler purple line along the spiracles. Head and thoracic plate were shining black, anal plate ochreous-brown. In general, younger larvae were more reddish-green.

The adult is decribed in Meyrick (1928). Adults range in wingspan from 10 – 12mm, and are most easily recognised in the field by the brownish forewings and thorax overlaid with a loose scattering of yellowish scales. They are reputed to be very retiring in their habits, and have never been noted to fly.

The species was formerly widely distributed in southern Britain. Apart from the westerly and central localities mentioned above, there are records in the middle of last century from Hainault Forest in Essex (Emmet, 1981).

The species is obviously not confined to forest habitats, given Wood's discovery, and presumably could be looked for wherever mosses abound. I was examining tree trunks closely for small spiders

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when I came across the dead moth. Perhaps an occasional diligent search of trunks for adults in August, or moss for larvae in May/June might reveal the presence of this insect elsewhere. However, the most promising sites to seek this moss-feeding moth might be in those which have had a long continuity of forest cover, creating the right habitat for a variety of mosses to flourish. Royal Forests are probably a better bet than, say, formerly coppiced woodlands: bryophytes seem to require long periods without disturbance to grow best (Rose, 1976), and the regular coppicing of many woods last century may have exterminated their foodplant and habitat requirements.

I am grateful to Mr. S. M. Palmer, the Wiltshire micro-lepidoptera recorder, for information about the Ramsbury record.

**References**

Emmet, A. M. (1981): *The smaller moths of Essex*. Essex Field Club.
Meyrick, E. (1890): *Entomologists' mon. Mag.*, **26**, 271.
Meyrick, E. (1928): *A revised handbook of British Lepidoptera*. London.
Rose, F. (1976): Lichenological indicators of age and environmental continuity in woodlands, in: Brown, D. H. *et al.* (eds.). *Lichenology: Progress and Problems*, pp 279-307. Academic Press, London.
Wood, J. H. (1891): *Entomologists' mon. Mag.*, **27**, 271-273.

NOTES ON HYPENA ROSTRALIS L. (LEP.: NOCTUIDAE) — It would seem worthy of placing on record the capture of a single male *Hypena rostralis* (L.), in worn condition, at m.v. light in my garden in Bishops Stortford, Hertfordshire on the night of 25 May 1987, (ten Km grid square TL 42). The national distribution shown in *The Moths and Butterflies of Great Britain and Ireland* **10**, page 389, shows a cluster of dots in the Surrey-Middlesex area, with only a scattered distribution elsewhere. Only eight post-1960 dots appear to be further north than the current record, all widely scattered and the most northerly for Britain being only 40 kilometres north of Bishops Stortford. Foster's 1937 '*A List of the Lepidoptera of Hertfordshire*' in the *Trans. Herts. nat. Hist. Soc. Fld. Club.* **20**: 157-279, gives Bricket Wood, St. Albans, Hitchin, Cheshunt, East Barnet, Watford, Bushey Heath, Tring, Berkhamsted and New Barnet, all without further comment. It is interesting that most of these localities border the north London area, in the south of the county, and that there are no records from the north-east near Stortford. The 1985 *List of the Macrolepidoptera of the*

*Bishops Stortford area*, published by the Bishops Stortford Natural History Society has no mention of the species, though there is a post 1960 record in *MBGBI* for TL 41, just beyond their recording area. The earlier (1950) list for the same area by P. B. M. Allan, (*Trans. Bishops Stortford nat. Hist. Soc.* volume 1, part 1), has three entries under *H. rostralis:* "Fairly common (Coleman); Several at sugar in the town in 1936 (Allan); Common at Little Hadham (Perkins)". No other Hertfordshire records have as yet come to my notice, and there are none at the Hertfordshire Biological Records Centre at Baldock Museum. In the neighbouring county of Essex the moth appears still to be genuinely rare outside the metropolitan zone of east London, with only five post-1970 ten-kilometre dots listed in *The larger butterflies and moths of Essex* by Emmet and Pyman, (1985), and none of these being near Bishops Stortford. In the metropolitan area, however, the situation appears different, as the moth has become increasingly regular at a number of light traps across the Capital over the last four or five years: records here seem to indicate that the moth may be spreading northwards and eastwards, at present fairly slowly. In any event it will be interesting to keep an eye open for this moth wherever hops are growing in a 'wild' situation.

The adult moth is a very easy insect to record: the secret is to look for it in the middle of winter! The adults hibernate in places which are usually cool and dark, but always dry. In London, I have found it in garden sheds, garages, outside toilet buildings in gardens, "Anderson" air-raid shelters, coal-bunkers and in the spiral staircase of a church tower. The common factor between all the sites is the presence of hops, (*Humulus lupulus*) in the immediate vicinity of the hibernation site. It can be spotted in such sites with the aid of a torch, since it seems to prefer to sit fully exposed, (in the middle of a wall for example), particularly if the site is permanently dark, (as in, for example, the church tower). In sites which may be lit on occasion, such as garden sheds, it secretes itself away and is more difficult to locate. I have not yet found it in hollow trees but have no reason to suppose this may not also prove a suitable place to search. Finding the larvae is equally easy. Select an area where hops grow in a mat across the ground and look for leaves riddled with holes. This feeding pattern is more or less identical to that of the currant pug *Eupithecia assimilata* Doubleday, so records of that species made solely on the feeding pattern on hop leaves are unreliable. The snout larvae can be easily obtained by use of a standard sweep net on hops where the leaves are holed. They feed nocturnally, but can be collected by day as they rest on the undersides of the leaves. In spite of what the books say the males at least do come to light, albeit sparingly. COLIN W. PLANT, Passmore Edwards Museum, Romford Road, London E15. 4LZ.

**LARVAL CASES OF** INCURVARIA PECTINEA **HAWORTH (LEP.: INCURVARIIDAE) ON WOOD ANTS' NESTS** – The following observations were made while on a walk round the Nature trail in the Glen Nant Forest Nature Reserve on 24th July 1987. It was a fine sunny day, ideal for the Open day that was in progress at the reserve in aid of the European Year of the Environment, and as a result the Wood Ants' nests were a hive of activity. While watching the comings and goings at one nest I became aware that some of the particles of debris forming the surface of the nest were in fact the bivalved larval cases of *Incurvaria pectinea* Haw. Closer inspection showed that there were no fewer than 14 cases of this species on the nest and all were being trampled over by the many voracious worker ants. In idle curiosity I picked up one of the cases and was surprised to find that it still contained a living larva. The nearest birch tree was some 15 feet from the nest and on inspection was found to have some of its lower leaves perforated by the characterestic oval holes left by the larvae of *I. pectinea* cutting out their first case after their initial period as leaf-miners. Furthermore directly beneath these leaves one of the dead Birch leaves on the ground contained a clean oval hole where a larva had subsequently cut out an oval of dead leaf to form one side of its bivalved case – the source of the cases was thus obvious.

Careful inspection of some 6 other wood ants' nests in close proximity to birch trees revealed that on 4 no larval cases of *pectinea* were to be seen but on the other two there was one and 10 cases respectively. Just over half of the cases examined still contained living larvae. The nature of the debris used by the different ant colonies in the construction of their nests was very variable and not simply dependent on what material was at hand – thus on one nest dead oak buds predominated while on another dead birch catkins were a major component. Thus selectivity of nest material by the ants may account for the presence of *pectinea* cases on only a few nests while *pectinea* larvae probably occurred close to all the nests judging by the abundance of characteristically perforated leaves.

I would be interested to know how widespread this hazard for *I. pectinea* larvae is. Or is it a hazard? It would appear that their bivalved cases are adequate protection against the ants and at night the larvae could safely emerge and feed on the leaf debris brought to the nest by the ants. Which parasitic hymenopteran is going to search for and attack a larva in the midst of a crowd of Wood Ants? Most parasitica appear to be primarily active during the daylight hours. All speculation of course but this could be an example of commensalism in the making. – K. P. BLAND, 35 Charterhall Road, Edinburgh EH9 3HS.

# *SPODOPTERA EXCELSA* ROUGEOT, A NEW SYNONYM OF *ATHETIS PIGRA* (GUENEE) (LEP.: NOCTUIDAE)

By C. F. DEWHURST* & M. P. CLIFTON**

## Introduction

Rougeot (1983) described some new Lepidoptera from a collection made in the High Simien mountains of Ethiopia during a week's visit in 1981. One of the species described was a noctuid moth to which he gave the name *Spodoptera excelsa* Rougeot.

As the genus *Spodoptera* contains some important agricultural pest species in Africa (e.g. *Spodoptera exempta* Walker), and the genus in Africa and the Near East has been studied in some detail (Brown & Dewhurst, 1975), it was of importance to study this newly described species.

### *Athetis pigra* (Guenée)

*Caradrina pigra* Guenée, 1852: 248.
*Proxenus pigra* Janse. 1938: 219, 238; Plates 17, 29; Fig. 61.
*Spodoptera excelsa* Rougeot, 1983: 230; Fig. 14. Holotype ♂, Ethiopia Simien Mts, Sankaber, 3400-3500m, 14.xi.1981, (P.-C. Rougeot) (MNHN, Paris) [examined]. Syn. n.
*Athetis pigra* (Guenée) (Medler, 1980: 361).

Dissection of the holotype clearly indicates that this is not a *Spodoptera* species, but a male of the species described by Guenée (1852) as *Caradrina pigra*. Janse (1938) provides very good photographs and drawings of the genitalia of this species under the name *Proxenus pigra* (Guenée). The genitalia of this species are clearly recognisable by the unusally shaped uncus and the large tubular densely-toothed cornutus on the vesica of the aedeagus.

## Discussion

*Athetis pigra* occurs widely in East and Southern Africa, Mauritius and Reunion (the type locality), but does not as far as we know have any pest status. Rougeot (1983) mentions the similarity of his species *Spodoptera excelsa* to another species, *Proxenus ignava* Guenée, which he also incorrectly referred to the genus *Spodoptera*. This species should provisionally be known as *Athetis ignava*

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(Guenée, 1852) (J. D. Holloway, pers. comm.) pending thorough revisionary study of the genera concerned. No material of this species was examined during the present study.

**Acknowledgements**

We thank Dr. G. Bernardi for allowing us access to the holotype specimen in the Museum National d'Histoire Naturelle (MNHN), Paris and Dr. J. Mark Ritchie and Dr. W. A. Sands for comments on the manuscript.

**References**

Brown, E.S. and Dewhurst, C. F., 1975, The Genus *Spodoptera* (Lepidoptera, Noctuidae) in Africa and the Near East. *Bull. ent. res.* 65: 221-262.

Guenée, A., 1852, in Boisduval, J. A. & Guenée, A., *Histoire Naturelle des Insectes. Species general des Lepidopteres. Vol. 5. Noctuelites* T. 1. p. 248.

Janse, A. J. T., 1937-39, *The Moths of South Africa, Vol. III. Cymatophoridae, Callidulidae and Noctuidae (partim)* vx + 435pp.

Medler, J. T., 1980, Insects of Nigeria – Check List and Bibliography. *Mem. Am. ent. Inst.* 30: vii + 919 pp.

Rougeot, P.-C., 1983, Lepidopteres du Haut-Simyen (Ethiopie du Nord). *Bull. Soc. Linn. Lyon* 52 (7): 219.

THE SLOE PUG, CHLOROCLYSTIS CHLOERATA (MABILLE), NEW TO NORTHAMPTONSHIRE (VC32) – Whilst beating blackthorn blossom in Weldon Park, near Corby, on the 11th May 1986, a single larva of this species fell onto the tray. Although this moth's range extends northwards to Yorkshire and Westmorland ([Agassiz, D. and others], 1981, *An identification guide to the British Pugs,* B.E.N.H.S.) this is apparently the first record for Northamptonshire, (J. Ward *pers. comm.*). The species has been noted at two further localities in the county this year, namely Castor Hanglands NNR and Bedford Purlieus. – MARK PARSONS, Nature Conservancy Council, Northminster House, Peterborough, Cambs. PE1 1UA.

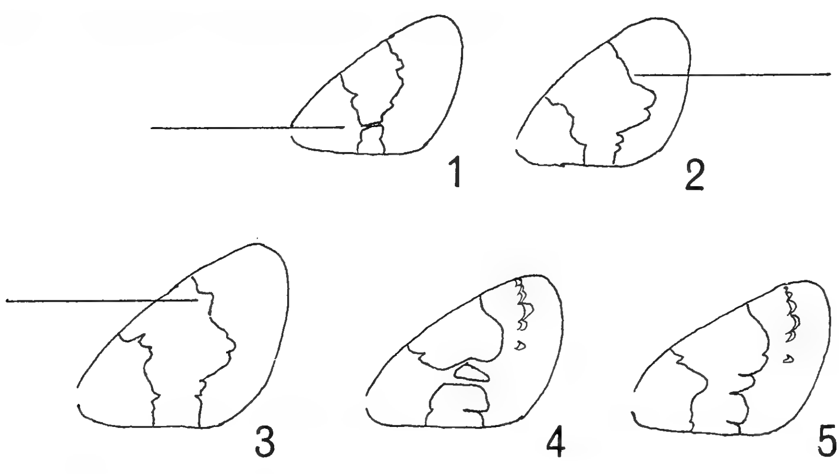
DIACHRYSIA ORICHALCEA FAB. (LEP.: NOCTUIDAE) IN HAMPSHIRE – A fresh specimen of this rare and beautiful immigrant was taken at my m.v. trap at Brockenhurst, in the New Forest, on 15.viii.1987. A. D. A. RUSSWURM, Coridon, Ober Road, Brockenhurst SO42 7ST.

# A GUIDE TO THE SEPARATION OF *LAMPROPTERYX*, *ECLIPTOPERA* AND *ELECTROPHAES* SPECIES (LEP.: GEOMETRIDAE)

By ADRIAN M. RILEY*

All four species in this group of geometroid moths (*Lampropteryx otregiata* Metcalf (Devon carpet), *L. suffumata* Dennis & Schiffermuller (water carpet), *Ecliptopera silaceata* D. & S. (small phoenix) and *Electrophaes corylata* Thunberg (broken-barred carpet)) have a black or brownish black, white-edged median band on pale brownish grey or grey forewings. All four fly in woodlands during may (*suffumata* in April and May; the others in May and June).

Their superficial resemblance and the possibility of finding them all in the same place, at the same time, can lead to confusion over identification. Reference to varying shades of brown or greyish browns as a diagnostic aid is only useful when specimens are in perfect condition. Worn individuals often appear very similar in colour. However, the shape of the median bands of the forewings can be used to separate these species. (See Figs. 1-5).




Figs. 1-5 : 1. *Electrophaes corylata* 2. *Lampropteryx otregiata* 3. *Lampropteryx suffumata* 4 & 5. *Ecliptoptera silaceata.*

*E. corylata* usually has the median band broken or tightly constricted at about one third of its length from the dorsum.

*L. otregiata* has the upper half of the postmedian edge of the band straight whereas in *L. suffumata* there is an extra angulation or

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point. *Suffumata* is also usually larger with a forewing length of approximately 15 mm. compared with 12mm. in *otregiata.*

*E. silaceata* has a heavily indented median band, often divided into roughly equal halves. There is also a series of dark lunules along the postmedian line, some of which are conspicuous on the underside of the forewing. They are not present in the other three species.

# Notes and Observations

CHRYSOLINA ORICALCIA MÜLL. (COL.: CHRYSOMELIDAE) IN S. E. LONDON. – The whole of this most attractive genus has long been very scarce or virtually absent in the immediate environs of London, on the south-east side at all events; though, as witness the localities given by Fowler (1890, *Col. Brit. Isl.* 4: 303-8), it was not always so. Up to now I have never been able to find even such allegedly common and generally distributed species as *C. polita* L. or *C. staphylea* L. in my home district. Great was my surprise and satisfaction therefore upon at last turning up the local and mostly uncommon *C. oricalcia* Müll. at the edge of the Shooters Hill Woods, a mere mile from here, by sweeping hedge-parsley (*Anthriscus sylvestris*) on 29th June. The beetle appeared to be restricted to an area of some 6 or 7 square yards at a rough estimate, in half-shade, four being taken that evening, two on the next, and one more on 6th July. The same plant (with other umbellifers) was diligently swept for a much longer distance along the Eltham Common edge of the woods – on parts of which it grows profusely – without encountering any further specimens.

What makes the occurrence even more unexpected is the fact that I had worked the locality, including the area concerned, on frequent occasions over the years – especially the last one, 1986; admittedly without any special attention to the hedge-parsley (an unproductive plant hereabouts) yet certainly not ignoring it. The question therefore poses itself: has *C. oricalcia* moved into the area only very lately? But in fact the species of *Chrysolina* tend to be sedentary insects little given to migration. Thus it seems more likely that *oricalcia* has long existed there, but mostly at a density so low that it has been missed; while some factor may have caused an increase this season, 1987 – even though the summer in these parts has not been notable for high temperatures before the very end of June. There are old records from as near here as Plumstead and Abbey Wood, and the beetle is known to occur at the present time, I believe very locally, in N. E. Surrey.

The Shooters Hill beetles were placed in a perspex sandwich-box and supplied with foliage of goutweed or ground-elder (*Aegopodium podagraria*) from the garden. This they took to quite readily, feeding mainly at night and not or barely showing themselves in

either natural or artificial light. They seemed to spend much time skulking between the layers of absorbent paper lining the box. Probably therefore, like certain other *Chrysolina* species, *oricalcia* is largely vespertine or crepuscular in its habits, if not nocturnal, and earlier in the day might have to be sought at the base of the plants. It is recorded from several species of Umbelliferae; the only specimen I ever met with in earlier years was swept in the Thames marshes near Higham, near plants of spotted hemlock (*Conium maculatum*). In July 1962 my friend Dudley Collins found one under cut herbage, mostly *Anthriscus*, at Carshalton Beeches near Croydon. The inclusion of *Populus nigra* among its host-plants by Mohr (1966) seems questionable and probably relates to casual occurrence.

Whether because of the change of foodplant, or for some other reason, my beetles failed to breed – at least, no pairings or eggs were observed after a week. It is hardly likely that both sexes were not present among the seven individuals, though *oricalcia* does appear to be one of our Chrysolinae where the sexes are not readily distinguishable at sight.

This species must not be confused on account of its name with the non-British *C. aurichalcea* Mann. The names are not, however, mere spelling variants; *aurichalcea* 'of gold-bronze', *oricalcia* (a corrupt spelling) 'of mountain bronze', i.e. brass – actually suitable, by the way, only to the var. *hobsoni* Steph. – A. A. ALLEN, 49 Montcalm Road, London SE7.

EPIPHYAS POSTVITTANA (WALK.) (LEP.: TORTRICIDAE) IN MARCH. Col. G. G. Eastwick-Field brought a moth into the museum for identification which proved to be a female *E. postvittana*. It had been found alive inside a shop in Canford Cliffs, Poole, Dorset on 17th March, 1987 and had been put in a jar for Col. Eastwick-Field who finally saw the specimen on 23rd March. By this time it had died. Bradley & Tremewan (*British Tortricoid moths* **1**) give: bivoltine, May to October, the two generations overlapping. We have taken this moth inland as late as early November so presumably it also occurs in that month in warm coastal areas such as Canford Cliffs. As to subsequent larvae, are there any records for the early months of the year thereby making Col. Eastwick-Field's record not so unusual?. B. R. BAKER, Reading Museum.

# Current Literature

**The insects of Thorne Moors** by **P. Skidmore, M. Limbert** and **B. C. Eversham.** The Sorby Record No. 23 (supplement) 1985 (published 1987). 64 pp. Limp. Published by the Sorby Natural History Society, price £2.00 (Available from M. Limbert, 23 Brockenhurst Road, Hatfield, Doncaster).

This work is a review of the sub-fossil and living insects of Thorne Moors, on the Yorkshire/Lincolnshire borders. The contents comprise an introduction, history of recording, entomological importance of the area, habitat categories, a species check list (some 2558 species of all orders), a bibliography and appendix of late records.

This publication represents the culmination of a great deal of work on this interesting area. The introductory sections are brief, but informative. The species check list uses a coding system to denote items such as national status, habitat type and regional status, and the year of the last record is also given. This makes reading the species lists a little complex and, of course, much information on dates of capture and names of recorders is lost in this synoptic presentation. Nevertheless, a useful addition to the local list publications.

**The Spiders of Great Britain and Ireland** Vol. 2 (Linyphiidae) By **Michael J. Roberts.** 204 pp. 4 colour and 94 line figs. Boards. Harley Books, 1987. Price £45.00 (£135 for the three volumes).

This publication completes the three-volume series (for original review see *Ent. Rec.* **98**: 213-214), and deals with the keys, diagnostic figures and text for the family Linyphiidae – numerically the largest British family with 267 species. The colour plates for this family are to be found in Volume 3. An addendum contains descriptions of six species recognised as British since the first two volumes were published, four being illustrated in colour. A glossary of terms and a check list of British Spiders completes the work.

The high standard, both of text and production, set in the first two volumes has been maintained. This is now undoubtedly and deservedly *the* work on British spiders.

**The management of chalk grassland for butterflies.** Focus on Nature Conservation No. 17. 80pp. Limp. Published by the Nature Conservancy Council, 1986. Price £5.00.

This publication is a review report by a team of amateur and professional butterfly ecologists, lead by Jeremy Thomas and John Bacon, primarily aimed at those responsible for the management of chalk grasslands. Five chapters deal with general perspectives; implementation of management; creating chalk grassland for butterflies; introducing butterflies, and, the major part, a species-by-species analysis. Several appendices deal with various matters from monitoring turf height to specimen grazing regimes adopted on named sites.

This is a sound and informative book packed with useful information, both on management techniques and the ecology of chalkland butterflies. Recommended for those interested in enlightened farming, conservation, or butterfly ecology.

## CONTENTS



## TO OUR CONTRIBUTORS

ALL MATERIAL FOR THE TEXT of the magazine as well as books for review must be sent to the EDITOR at 4 Steep Close, Orpington, Kent BR6 6DS.

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**The Entomologist's Record and Journal of Variation**

# SPECIAL INDEX

COMPILED BY S. N. A. JACOBS (LEPIDOPTERA)
AND A. A. ALLEN (OTHER ORDERS)

Newly described taxa (species, genera etc.) are distinguished by **bold type**. Taxa new to Britain or newly recognised as British are denoted by an asterisk.

## Vol. 99, 1987

### LEPIDOPTERA

Page

**A**



Page



**B**

Page



Page

## COLEOPTERA

## CORRECTIONS

Page 83, line 19: for 'list of host-list' read 'host-list'
Page 110, line 12: for 'Lock' read 'Loch'
Page 110, line 13: for 'Richards' read 'Richard'
Page 110, line 18 up: for 'published' read 'publish'
Page 110, line 11 up: for 'Silverberg' read 'Silfverberg'
Page 110, line 8 up: for 'Svenk' read 'Svensk'
Page 155, line 21: for 'Epursa' read 'Epuraea'
Page 218, line 7 up: for 'Historidae' read 'Histeridae'
Page 267, line 3 up: for 'befor' read 'before'
Page 270, line 19 up: for 'TRISTALES' read 'TRISATELES'.

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